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PSYCHOLOGY, EPISTEMOLOGY AND METAPHYSICS.

IN what is called in the widest sense "philosophical" discussion it is tolerably well known by this time that a fruitful source of confusion and controversy has been the mixing up of psychological with strictly philosophical or metaphysical questions. This is one of the current criticisms upon the English school of thinkers as represented by Locke, Berkeley, and Hume, and their successors in the present century like the Mills. It is said that when we ask them for a philosophical theory of knowledge and existence, they reply with an account of the growth of consciousness in the individual sentient organism. There is a great measure of truth in this criticism. The fault of these philosophers lies, however, not in their exclusively psychological attitude, — for in that case their theories would stand as psychology, and we should look for our philosophy elsewhere, — but in their unconscious shifting from one point of view to the other. They are far from being pure psychologists; there is a great deal of philosophy or theory of knowledge in Locke, Berkeley, and Hume. But they speak sometimes from one point of view, sometimes from the other, without being aware that the two points of view are different. This criticism, however, — though it is specially true of English philosophy, — applies more or less to philosophical writers in general, and hence it is encouraging to note that within quite recent times a sense of the need of greater precision has shown

itself in the most varied quarters, English as well as continental, among empiricists as well as transcendentalists. Strenuous attempts have been made to differentiate the various questions embraced under the general term "philosophy," and assign each as a subject of inquiry to a separate science or discipline.

In this way there has been constituted what, so far as the name goes, is a new science, though the inquiries grouped under it have formed part of philosophical investigation since a very early time. This is the science which, for the last thirty years or so, the Germans have come to call distinctively *Erkenntnisstheorie*, or theory of knowledge. Theory of Knowledge has been the circumlocution largely adopted by English writers who have wished to enforce the distinction between these inquiries and the investigations of psychological science. But as the distinction has come more to the front, the need of a single word has been felt, — were it only, as Hamilton pointed out in the case of psychology, that we may be able to form an adjective from it, — and accordingly just as psychology supplanted the more cumbrous designations such as science or philosophy of mind, so the excellent and in every way unobjectionable title of epistemology will, in all probability, permanently take the place of the less convenient designation "theory of knowledge."

But it will be asked what is the subject of this new science, or rather what particular philosophical inquiries are to be isolated and grouped under it? To this it may be answered generally that epistemology is an investigation of knowledge as knowledge, or, in other words, of the relation of knowledge to reality, of the validity of knowledge. This, at least, is the fundamental question to which other epistemological discussions are subsidiary. The precise bearing of this definition is best seen by a contrast between epistemology and psychology in their mode of dealing with the same subject-matter; for, in a sense, the fact of knowledge belongs to psychology as much as to epistemology. This contrast has been lucidly expounded within the last few years by several writers. But the differ-

ence in point of view is very fairly stated by Locke, though he was one of the worst sinners in practically confounding what he had theoretically distinguished. The distinction between psychology and epistemology, indeed, is the distinction between the Second Book of the *Essay* and the Fourth, and this Locke explains in his Introduction as follows: "First, I shall inquire into the original of those ideas, notions, or whatever else you please to call them, which a man observes, and is conscious to himself he has in his mind; and the ways whereby the understanding comes to be furnished with them." This is pure psychology — what, he asks, are the mental states which constitute the individual mind, and into what elementary facts may they be analyzed — of what primitive facts may the more complex be the result? "Secondly [he proceeds], I shall endeavor to show what knowledge the understanding hath by those ideas, and the certainty, evidence, and extent of it." This is the question of epistemology: What knowledge can I have of the world of men and things, by means of my mental states?

Psychology, according to Locke's way of putting it, deals with "ideas," which he defines as "the immediate objects of the mind in thinking";[1] it treats ideas as mental facts which have an existence of their own in consciousness. Epistemology deals with the "knowledge" which we reach by means of these ideas or immediate mental facts. It takes the ideas not as themselves bits of fact, but as signs or symbols of some further reality; it takes them, in short, as ideas *of* things. Hence the word "idea," taken even in the wide sense in which it is used by Locke, is not a good one to employ in a psychological reference; for it inevitably contains this epistemological implication, this reference of the mental state to something beyond itself. "States of consciousness," as Mr. Ward suggests, would be a more appropriate and colorless designation for the objects of psychological science. The psychologist deals with psychical events merely as such; the world of conscious states is the

[1] Second Letter to the Bishop of Worcester. So, again, *Essay*, Bk. II, c. 8, 8: "Whatsoever the mind perceives in itself, or is the immediate object of perception, thought, or understanding."

reality with which alone he is concerned, and each state of consciousness is a real fact in that world — a fact occurring at a definite time and in a definite set of connections with other psychical facts. The interconnections of this factual world, the laws of the happening of psychical events, are what the psychologist has to investigate.

It is only for the psychologist, however, that mental states are interesting on their own account, as subjective realities or facts. To every one else they are interesting only for what they *mean*, for the knowledge they give us of a world beyond themselves. Viewed in themselves, the mental states are, as it were, only instrumental; *by* them, as Locke says, the understanding hath knowledge. They are merely a mechanism by which a world of men and things is somehow revealed to me. It is only for the psychologist, I say, that the investigation of this mechanism, as a mechanism, has an interest. To all the rest of mankind ideas or presentations are interesting only for the knowledge they give us of a reality beyond themselves. In point of fact, we never pause to consider them as what they are in themselves, — we treat them consistently as significant, as ideas of something, as representative or symbolic of a world of facts. Now it is from this latter point of view that epistemology considers ideas.

Of course this distinction, even the manner of stating it, is far from being new. Not to go further back, it is drawn with great clearness in the writings of Descartes and his followers. In fact, considerable emphasis is laid upon it in the Cartesian philosophy, and a special terminology is employed to designate it. "Ideas," says Descartes himself,[1] "may be taken in so far only as they are certain modes of consciousness," and so regarded, "they all seem in the same manner to proceed from myself." That is to say, they are all subjective functions or psychical events. But they may also be considered "as images, of which one represents one thing and another a different." So far as the idea is taken simply as an act or function of the mind,

[1] Third Meditation.

a subjective fact, it is said by the Cartesians to have "*esse formale seu proprium*"; so far as it is taken in its representative capacity, as standing for some object thought, it is said to have an objective or vicarious being — *esse objectivum sive vicarium.* There is a tendency in the Cartesian school to appropriate the term "idea" in the first or psychological sense, and to use "perception" in the epistemological reference. Perception is certainly a term which should be the exclusive property of the epistemologist; and it is satisfactory, therefore, to note that the most recent psychologists seem inclined to substitute for it the term "presentation." But the term "idea" also, as we have seen, belongs more appropriately to epistemology, and so pre-eminently of course do such terms as "knowledge" and "cognition." As already indicated, the best general psychological equivalent is states of consciousness, mental states, psychical functions.

In accordance with what has been said, Epistemology may be intelligibly described as dealing with the relation of knowledge to reality. Of course, if we take reality in the widest sense, our cognitive states are also part of reality; they also *are.* The wildest fancy that flits through the mind exists in its own way, fills out its own moment of time, and takes its individual place in the fact-continuum which constitutes the universe. But, as we have seen, this aspect of mental facts may be conveniently neglected, and hence reality in the above phrase comes to be used in a narrower sense. It means not necessarily physical or material realities, but realities which have a different fashion of existence from the fleeting and evanescent mode of psychical states — beings or things which are in some sense permanent and independent, which at all events have a reality different in kind from that of mental states. This reference of ideas to a world of reality beyond themselves is what is meant when knowledge is contrasted with reality, and when question is made of the relation of the one to the other.

This way of putting the epistemological problem may be said to beg the question at issue between Idealism and Realism — inasmuch as the terminology is incompatible with those ideal-

istic theories which deny, or seem to deny, the existence of any such extra-conscious reality as is here spoken of. In truth, however, this is not so; for in any case this dualism *seems* to exist, and so, if not justified, it has to be explained away. Subjective idealism, accordingly, must have an epistemology of its own, even if it be only of a negatively critical character. For indeed no theory can deny the contrast between the present content of consciousness and that which it symbolizes or stands for. No theorist takes the particular mental state as independent and self-sufficient; he cannot avoid referring it beyond itself. But if he is a subjective idealist, say like Mill, he will try to avoid the acknowledgment that this reference of present consciousness beyond itself carries us *beyond consciousness altogether*. He will explain it as a reference of a particular mental state to a permanent law of connection between mental states, and thus convey the impression that the reality to which the subjective consciousness refers is still in a manner *within* that consciousness. This does not appear to me to be an adequate account of the facts, but what I am concerned to show just now is only that the epistemological question is not determined out of hand by the way in which it has been defined. The essential epistemological contrast is as fully recognized by Mill as any Realist could wish to see it. Take his own words in evidence: "The conception I form of the world existing at any moment, comprises, along with the sensations I am feeling, a countless variety of possibilities of sensation. . . . These various possibilities are the important thing to me in the world. My present sensations are generally of little importance, and are, moreover, fugitive; the possibilities, on the contrary, are permanent, which is the character that mainly distinguishes our idea of Substance or Matter from our notion of sensation." This reference of the "fugitive" content of consciousness to a "permanent," which is somehow beyond it (a reference which Mill admits and emphasizes), is just what we ordinarily mean by knowledge, and as such it constitutes the problem of epistemology. But the unavoidable acknowledgment of this contrast, of this reference, does not imply any decision as to the

nature of the "permanent," or the precise sense in which the "beyond" is to be understood. It may be Mill's permanent possibilities of sensation, it may be the unconscious matter of popular philosophy, it may be an infinite number of monadic consciousnesses, or it may be a system of divine or objective thought. These are further questions, to be determined partly by epistemology, partly by metaphysics, but they all equally presuppose that epistemological dualism which can be denied only by a theory which would be content with the momentary presentations of sense, as they come and go in hopeless entanglement and disarray.

To recapitulate, then. Psychology, assuming the existence of a subject or medium of consciousness, seeks to explain, mainly by the help of association or processes practically similar, how out of the come-and-go of conscious states, there are evolved such subjective facts as perceptions, the belief in an independent real world, and the idea of the Ego or subject himself. It investigates how such ideas and beliefs come to pass, but it does not touch the further question whether they are well-founded or no. They may be a correct account of the real state of things, or they may be illusions; but anyway they are beliefs, subjective facts which may be shown with probability to have arisen in a certain way. And that is enough for psychology which, so far as it sticks to its own last, does not seek to go beyond the inner world of the subject. The external world, so far as psychology treats it, is simply a complex presentation in consciousness, a subjective object: with the extra-conscious or trans-subjective psychology *ex vi termini* can have no concern. Belief in a trans-subjective world may, indeed, — must, in fact, — be treated by the psychologist. But that belief, again, he treats simply as a subjective fact; he analyzes its constituents and tells us the complex elements of which it is built up; he tells us with great precision what we do believe, but so far as he is a pure psychologist he does not attempt to tell us whether our belief is true, whether we have real warrant for it. On that point he is dumb.

If it is objected that this view of psychology, as limited to

the subjective world, is insufficient, seeing that in great part of his work the psychologist is bound to assume the correlation of mind and body, and the existence of an external cause of impressions, I reply that, on its physiological or experimental side, psychology simply places itself at the point of view of the other sciences. It is now as purely objective as it was before purely subjective. It takes up its position in the object from the outset, and treats subjective facts themselves as objective, *i.e.* as mere appendages or accompaniments of the objective facts of nerve and brain. Psychology is thus either purely subjective or purely objective in its standpoint, according as we look at it. What it does *not* deal with is the nature of the relation between the subject and the object, which is exemplified in every act of knowledge.

Now it is the essential function of epistemology to deal with this very relation, to investigate it *on the side of its validity, its truth.* With what right do we pass beyond our subjective states? What is the ground of our belief in an independent world? Our cognitive states appear to refer themselves to a reality which we know by their means. Epistemology does not, like psychology, rest in the appearance. It seeks to determine whether the appearance is true, and, if true, in what sense precisely it is to be understood. The point on which psychology is dumb, forms the central problem of epistemological science. What is reality, the epistemologist asks. Is there any reality beyond the conscious states themselves and their connections? If there is, in what sense can we be said to know it? Is knowledge, inference, or belief, the most appropriate word to use in the circumstances? The fundamental question of external perception thus broadens out into a general consideration of the foundations of belief. And, accordingly, the whole inquiry might be fitly enough so described in a more generalized fashion — namely, as an inquiry into "the foundations of belief." So it is described by Mr. Arthur Balfour in the sub-title of his *Defence of Philosophic Doubt*, a book which may be regarded as one of the most brilliant of recent English contributions towards an epistemology or theory of knowledge in the strict sense of

these terms. Mr. Balfour expressly defines his subject-matter as "a systematic account of the grounds of belief and disbelief," and he is at pains in his introductory chapter to distinguish the inquiry most carefully from psychology, on the one hand, so far as that investigates merely the growth and causes of a belief, and on the other hand from metaphysics or ontology.[1]

For on this side also the line requires to be drawn. If epistemology is not to be confounded with psychology on the one hand, neither is it to be identified with metaphysics on the other. The prevalent confusion in English philosophy between the two first has been well exposed by Kantian and Hegelian writers, but some of them have themselves fallen into a new confusion between epistemology and metaphysics. A considerable section of my last course of Balfour Lectures[2] was devoted, indeed, to showing that English Neo-Kantianism, as it

[1] As regards a name for the inquiry thus isolated and defined, Mr. Balfour proposes the term Philosophy, acknowledging at the same time that this application is not exactly sanctioned by usage. If it were at all possible to appropriate the general term, Philosophy, in a specific sense, there might be much to say for this innovation. Many arguments in its favor might be drawn even from the vague sense which the term bears in current usage. In modern times, and within the present century in particular, Philosophy is very frequently used in the schools as equivalent to Epistemology or Theory of Knowledge. But in spite of this, it seems to me hopeless (and undesirable) to cut ourselves loose from the tradition of more than two thousand years, which associates the term irrevocably with metaphysical or ontological speculation. By metaphysics or ontology I mean some kind of theory or no-theory of the ultimate nature of things. Such a metaphysical theory is that to which all other philosophical inquiries lead up, — that in which they culminate, — and it seems to me undesirable to define philosophy in such a way as to exclude from its scope what has hitherto been considered its heart and soul. I confess, indeed, that if we are to narrow the term at all, I should be inclined to identify philosophy rather with metaphysics or ontology. The claim on behalf of epistemology, as I take it, is that it lays the substructure; it is the necessary preliminary alike of science and of metaphysics. But it may as fairly be argued on the other side that the ultimate or culminating science has the best claim to the time-honored title. Happily, however, we are not reduced to an aimless wrangle of this description, for Epistemology is just the single term we want. Philosophy will doubtless remain in its indefiniteness as a generic title, associated now more closely with theory of knowledge, now more closely with metaphysics; while epistemology (overlapping into logic), metaphysics or ontology, and ethics (which as metaphysic of ethics is connected in the most intimate way with any ultimate theory of things) — while these three at least, to mention no more at present, are covered by her ample ægis.

[2] *Hegelianism and Personality.*

has come to be called, seeks to establish metaphysical positions by arguments which are purely epistemological, and therefore unconvincing when stretched beyond their proper application. And in this respect I have seen no reason, during the years that have elapsed, to change the views I then expressed. For it must not be forgotten that the question which epistemology finds before it is the relation of the *individual* knower to a world of reality — a world whose very existence it is bound to treat at the outset as problematical. How, or in what sense, does the individual knower transcend his own individual existence and become aware of other men and things? It is this relatively simple and manifestly preliminary question which epistemology has to take up. Subjective states are plainly our data; it is there we have our foothold, our *pied à terre;* but unless we can step beyond them, metaphysics in any constructive sense can hardly make a beginning. Epistemology, if its results are negative, necessarily leads to a thoroughgoing scepticism; but if its results are positive, it only clears the way for metaphysical construction or hypothesis. The mere fact that we believe ourselves to have successfully made the leap from the subjective to a real which is independent of our subjectivity, does not reveal to us off-hand the ultimate ground or essence of that real. Epistemology, in short, has to do entirely with the relation of the subjective consciousness to a trans-subjective world which it knows or seems to know. Metaphysics has to do with the ultimate nature of the reality which reveals itself alike in the consciousness which knows and the world which is known. The categories of the one are subjective and trans-subjective (conscious state and real being); the categories of the other are pre-eminently essence and appearance.

It is true we use some categories in both connections; but if we look more carefully we shall find that they bear a totally different sense in the two cases, and grievous is the damage that has ensued to philosophy from the failure to keep the two senses separate. The much-abused term "phenomenon" is one of those double-faced words; phenomenon in a metaphysical reference is the manifestation or revelation of an essence or in-

dwelling reality. When the poet speaks of "a Presence which disturbs him with the joy of elevated thoughts, a motion and a spirit which impels all thinking things, all objects of all thought," he is metaphysically contrasting the essential Spirit with the universe of intelligences and intelligibilia, which are its manifestation or phenomenon. *Natura naturata*, in the old phrase, is the phenomenon of *natura naturans*. If, with Goethe, we say that nature is the garment of God by which we see Him, we make nature the phenomenon of a divine essence. If we take atoms and the void as our metaphysical principia, then the human consciousness and the variegated face of nature as it appears to that consciousness are phenomena of what Berkeley calls the materialist's "stupid thoughtless somewhat." If we say with the Hegelians that Thought is the ultimate reality which manifests itself alike in nature and man, we are engaged with the same metaphysical contrast; if we say Will with Schopenhauer or the Unconscious with Hartman, it is still the same — it is a metaphysical contrast, a metaphysical problem, which engages us. But phenomenon has also come to be used in an epistemological reference, and then it means, and ought to be restricted to mean, the subjective state as contrasted with the trans-subjective reality known by means of that state. In that sense, familiar to us from Kant, to say that we know only phenomena means that we know only our own conscious states and cannot know "things-in-themselves," that is to say, the trans-subjective realities of which our states are the evidence. Here it is obvious the use of the term "phenomenon" is quite a new one. Nor is the epistemological thing-in-itself to be identified with the metaphysical essence. For even if we possessed that knowledge of trans-subjective realities which Kantianism denies, we should still be dealing only with phenomena in the metaphysical sense — with the particular existences of the universe, not with the essence or universal of which they are the expression. When such a serious ambiguity is discovered lurking in a term which is so freely bandied about as "phenomena," it may well be doubted whether the controversialists

are always clear as to the sense in which they mean it to be taken.[1]

But, indeed, the time-honored title of Idealism itself covers a *double entendre* of a similar description, according as it is used metaphysically or epistemologically. Metaphysically, Idealism is opposed most ordinarily to Materialism; in the widest sense it is the opposite of what may be called the mechanical and atheistic view of the universe, whatever special form that may take. Is self-conscious thought with its ideal ends, — the True, the Beautiful, and the Good, — the self-realizing End that works in changes and makes it Evolution? or are these but the casual outcome of a mechanical system — a system in its ultimate essence indifferent to the results which in its gyrations it has unwittingly created and will as unwittingly destroy? Is thought or matter the prius? Is the ultimate essence and cause of all things only "dust that rises up, and is lightly laid again"; or is it the Eternal Love of Dante's Vision — "the love that moves the sun and the other stars"? That is the fundamental metaphysical antithesis. If we embrace the one alternative, however we may clothe it in detail, we recognize the universe as our home, and we may have a religion; if we embrace the other, then the spirit of man is indeed homeless in an alien world. In the plain, impressive words of Marcus Aurelius — "the universe is either a confusion and a dispersion, or it is unity and order and providence. If it is the former, why do I care about anything else than how I shall at last become earth? But if the other supposition is true, I venerate, and I am firm and I trust in Him who governs." Marcus Aurelius expresses the difference from the religious or practical side; from the speculative side the difference is, as I have said, a metaphysical one, and all the theories which support the latter alternative may be embraced under the generic name of Idealism.

[1] A fuller analysis of the use of the term "phenomena" in Kantian and positivistic thought would bring some of these inconsistencies instructively to light. For the plausibility of the *quasi*-scientific agnosticism which is so widely spread in our periodicals and popular philosophy depends in great part on a systematic confusion between the two different senses of the word.

Quite distinct from this metaphysical Idealism, however, is the epistemological Idealism which is opposed, not to Materialism, but to Realism. Here the question at issue is not the problem of the ultimate constitution of the universe; it is the question of the theory of knowledge — in its most obvious and easy form, — the question of the external world and the nature of the existence we are prepared to assign to it. Has it any existence beyond the minds of the conscious beings who perceive it, or is *percipi* its whole *esse?* Does the actual and possible experience of conscious beings constitute an exhaustive account of its *modus essendi?* Is it a mere phenomenon, a mental appearance, or does it possess in some sense an extra-conscious reality of its own? The question might be more exactly formulated, for as soon as we essay a solution we find that it involves not only the existence of what we usually call the external world, but all existence whatever beyond my conscious states. It includes, therefore, the validity of my belief in the existence of other conscious beings. But the question itself and its details are not at present before us: we are not called upon at this stage to do more than indicate its general nature. It is obvious that we are here in the presence of a set of problems of a widely different range and import from the metaphysical problem indicated a minute or two ago. We are dealing with the preliminary question of the extent and validity of knowledge — in a word, with epistemology, not with metaphysics or ontology. It is equally obvious that epistemological Idealism does not coincide with the metaphysical Idealism sketched above. Berkeley is usually classed as a subjective Idealist in the epistemological sense; and if we accept this classification, we might say that in his case the two senses of Idealism *happen* to fit the same person. But Berkeley is NOT a consistent subjective idealist: he is only an immaterialist. He believes in the real trans-subjective existence of other finite spirits, and of God the infinite Spirit, and it is his epistemological *Realism* in these respects that enables him to reach his metaphysical Idealism — his conviction of order and reason at the heart of things. Consistent epistemological idealism must

be Solipsism at the best; indeed, it is Hume, not Berkeley, that is in this sense an idealist of the purest water, and Hume is not so much as a Solipsist. It might easily be shown that epistemological Idealism inevitably conducts us in consistency to scepticism of the Humian or an essentially similar type. Where a so-called Idealism fails to reach this goal, it is in virtue of the realistic elements which it inconsistently adopts into its system. Such a line of argument would form a convincing proof from history of the distinction on which I am insisting between epistemology and metaphysics. For scepticism is, of course, so far from being allied to *metaphysical* Idealism that it would rather require to be bracketed with materialism. Though, of course, not dogmatic like the latter, it ranks with it as a philosophy of despair. If epistemological Idealism is thus twin brother of Scepticism, it is plain, on the other hand, from what I have said, that a thinker may be, epistemologically, a strenuous Realist, and at the same time an Idealist in the broad metaphysical sense of the term. He is such an Idealist if he recognizes that all the real individuals whose trans-subjective existence he maintains are "moments in the being" of an intelligently directed Life. Indeed, as has been hinted, it is *only* in virtue of epistemological Realism that we can avoid Scepticism and so much as begin our journey towards metaphysical Idealism.

It follows, therefore, that nothing can be more essential to clear thinking than to keep these two sets of questions apart; yet I am afraid that they are constantly interchanged. In particular it seems to me that this is the case with many of the English thinkers, who profess a general allegiance to Kant or Hegel. The English neo-Hegelians convey the impression that in order to reach a metaphysical, or, as they call it, a spiritual, Idealism, it is at least necessary to deny the reality of "things-in-themselves." Metaphysically they mean by this, as I perfectly well understand, that the external world is not to be taken as an independent fact, existing, so to speak, on its own account, and having only accidental relations with the rest of the universe. The universe is once for all a whole, and the external world, as the Hegelians put it, is essentially related to intelli-

gence; in other words, it is not a brute fact existing outside the sweep of the divine life and its intelligent ends. In all this I most heartily agree with the neo-Hegelians. Whether we can absolutely *prove* so much or no, it is certain that so much is involved in every constructive system of metaphysics; and certainly we cannot *believe* less without lapsing into scepticism. If we put this metaphysical sense upon the words, then I most certainly believe, in Berkeley's phrase, that "the absolute existence of unthinking things are words without a meaning." There is no metaphysical thing-in-itself, no *res completa*, except the universe regarded as a self-existent whole. The thinker who leaves anything *outside* in this way makes confession of speculative bankruptcy. But though the unrelated thing-in-itself can have no place in metaphysics, it is quite otherwise with the epistemological thing-in-itself, if we are to designate trans-subjective reality by this ill-omened phrase. The existence of the latter must be asserted as strenuously as that of the former must be denied. All my fellow-men are things-in-themselves to me in the epistemological sense, — extra-conscious realities, — and I fail to see how we can draw any hard and fast line at them.

Hence, as I have argued on a previous occasion, anything which tends to confuse the two questions is to be deprecated: we cannot deal with the two in the same breath without confusing the issues. Our epistemological premises will not bear our metaphysical conclusion. Epistemology starts, and must start, from the individual human consciousness — the only consciousness known to us. If, however, it be pointed out to a neo-Hegelian that the epistemological assertions which he makes as to the relation of knower and known are plainly untenable as applied to this consciousness, we are met by the rejoinder that they are not meant to be understood of any subjective or individual consciousness, but of a so-called universal or divine consciousness. It is not my purpose at this stage to discuss the satisfactoriness of this hypothetical divine epistemology as a metaphysic of existence, but I would point out that by this procedure, illegitimate as I consider it, the real question of

epistemology is burked. That question is very fairly put by Professor Huxley in a page of his little book on Hume. In pursuance of a favorite line of thought, he is skilfully balancing Idealism and Materialism against one another in such a way as to leave both problematical, and in stating the case in favor of what he calls Idealism, he uses the following expression: "For any demonstration that can be given to the contrary effect, the 'collection of perceptions' which makes up my consciousness may be an orderly phantasmagoria generated by the Ego, unfolding its successive scenes on the background of the abyss of nothingness."[1] With Professor Huxley's own view we have nothing to do here, but simply with the statement quoted, namely, that there is no logically coercive proof of any real existence beyond the subjective consciousness. Idealism is used by Professor Huxley in its epistemological sense, and is equivalent with him to Solipsism. His position amounts to this: that reason does not force us to go beyond the circle of our own consciousness: all that is may be a skilfully woven system of my individual presentations and representations. This is the true question of epistemology; that, at least, which it has first to settle. But to judge from the writings of the neo-Kantians and Hegelians, one would hardly gather that individual knowers existed at all. The subjective consciousness seems suppressed; they often speak as if knowledge were not a subjective process at all. In Hegel himself, just for this reason, there is no epistemology; we hear nothing of individuals, but only of the universal process in which objective thought comes to consciousness of itself.

Hegelianism, in fact, offers an eminent example of the confusion between Epistemology and Metaphysics on which I am dwelling. With Hegel the essence of the universe is thought here in the subject and thought there in the object; and there is some temptation therefore to think that this metaphysical identity absolves us from the epistemological inquiry. But that is not the case. However much the objective world and

[1] *Hume* (English Men of Letters), pp. 80–81.

the individual knower may be identical in essence, the objective thought which he recognizes is still trans-subjective to the individual knower, just as much beyond his individual consciousness, as if it were the crass matter of the Natural Dualist; and the question how we reach this trans-subjective, how we transcend the individual consciousness, has still to be faced. The epistemological dualism, in other words, remains in full force, and only if that is satisfactorily surmounted, can we have any guarantee for our metaphysical monism, for the asserted identity of thought and being. Far be it from me to say, however, that Hegel and the neo-Hegelians are the only sinners in this respect. If Hegel swamps Epistemology in Metaphysics, the Realism of Scottish philosophy often errs as much in an opposite direction. In answer to Hume it insists (most rightly, as I think, in principle, though not always happily in point of expression) upon an epistemological dualism of subject and object as the fundamental fact of knowledge. But when it proceeds forthwith to treat this epistemological dualism of knowledge and reality as a metaphysical dualism between mind and matter, between two generically different substances, it falls at once into most unphilosophical crudities. Dualism in knowledge is no more a proof of metaphysical heterogeneity than identity of metaphysical essence in Hegel's sense can be taken as eliminating the epistemological problem.

The problem of knowledge and the Real, then, is the question which Epistemology has to face. As stated by Professor Huxley, and indeed as stated in any form, it is apt to appear fantastical and frivolous to the common-sense mind; but if it were so, it would hardly have formed the central problem of modern philosophy. I am convinced at least that unless it is probed to the bottom, we can have no clearness as to the foundations of knowledge and belief; and without such clearness we can hardly expect to make satisfactory progress in philosophy.

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A PLEA FOR PSYCHOLOGY AS A 'NATURAL SCIENCE.'

IN the first number of this journal, Professor Ladd takes my *Principles of Psychology* as a text for certain critical reflections upon the cerebralistic point of view which is becoming so popular in psychology to-day. I appreciate fully the kind personal tone of the article, and I admit that many of the thrusts strike home, though it shocks me a bit, I confess, to find that in some particulars my volumes have given my critic so false an impression of my beliefs. I have never claimed, for instance, as Professor Ladd seems to think I claim, that psychology as it stands to-day, *is* a natural science, or in an exact way a science at all. Psychology, indeed, is to-day hardly more than what physics was before Galileo, what chemistry was before Lavoisier. It is a mass of phenomenal description, gossip, and myth, including, however, real material enough to justify one in the hope that with judgment and good-will on the part of those interested, its study may be so organized even now as to become worthy of the name of natural science at no very distant day. I hoped that my book would leave on my readers an impression somewhat like this of my own state of mind. I wished, by treating Psychology *like* a natural science, to help her to become one. But what one book may have said or not said is a matter of small moment. My two volumes are doubtless uncouth enough; and since Professor Ladd wrote his article my general position has probably been made more clear in the abridgement of them, which Messrs. Holt & Co. have recently published under the name of 'Psychology: Briefer Course.'[1] Let us drop the wearisome book, therefore, and turn to the question itself, for that is what we all have most at heart.

[1] See especially the chapters headed 'Introductory' and 'Epilogue.'

What may one lawfully mean by saying that Psychology ought to be treated after the fashion of a 'natural science'? I think that I can state what I mean; and I even hope that I can enlist the sympathy of men like Professor Ladd in the cause, when once the argument is fairly set forth.

What is a natural science, to begin with? It is a mere fragment of truth broken out from the whole mass of it for the sake of practical effectiveness exclusively. *Divide et impera.* Every special science, in order to get at its own particulars at all, must make a number of convenient assumptions and decline to be responsible for questions which the human mind will continue to ask about them. Thus physics assumes a material world, but never tries to show how our experience of such a world is 'possible.' It assumes the inter-action of bodies, and the completion by them of continuous changes, without pretending to know how such results can be. Between the things thus assumed, now, the various sciences find definite 'laws' of sequence; and so are enabled to furnish general Philosophy with materials properly shaped and simplified for her ulterior tasks. If, therefore, psychology is ever to conform to the type of the other natural sciences, it must also renounce certain ultimate solutions, and place itself on the usual common-sense basis by uncritically begging such data as the existence of a physical world, of states of mind, and of the fact that these latter take cognizance of other things. What the 'physical world' may be in itself, how 'states of mind' can exist at all, and exactly what 'taking cognizance' may imply, are inevitable further questions; but they are questions of the kind for which general philosophy, not natural science, is held responsible.

Now if there is any natural science in possession of a subject-matter well set off and contrasted with all others, it is psychology. However much our self-consciousness, our freedom, our ability to conceive universals, or what not, may ally us with the Infinite and Absolute, there is yet an aspect of our being, even of our mental being, which falls wholly within the sphere of natural history. As constituting the inner life of individual persons who are born and die, our conscious states are temporal

events arising in the ordinary course of nature, — events, moreover, the conditions of whose happening or non-happening from one moment to another, lie certainly in large part in the physical world. Not only this; they are events of such tremendous practical moment to us that the control of these conditions on a large scale would be an achievement compared with which the control of the rest of physical nature would appear comparatively insignificant. All natural sciences aim at practical prediction and control, and in none of them is this more the case than in psychology to-day. We live surrounded by an enormous body of persons who are most definitely interested in the control of states of mind, and incessantly craving for a sort of psychological science which will teach them how to *act*. What every educator, every jail-warden, every doctor, every clergyman, every asylum-superintendent, asks of psychology is practical rules. Such men care little or nothing about the ultimate philosophic grounds of mental phenomena, but they do care immensely about improving the ideas, dispositions, and conduct of the particular individuals in their charge.

Now out of what may be called the biological study of human nature there has at last been precipitated a very important mass of material strung on a guiding conception which already to some degree meets these persons' needs. The brain-path theory based on reflex action, the conception of the human individual as an organized mass of tendencies to react mentally and muscularly on his environment in ways which may be either preservative or destructive, not only helps them to analyze their cases, but often leads them to the right remedy when perversion has set in. How much more this conception may yet help them these men do not know, but they indulge great hopes. Together with the physiologists and naturalists they already form a band of workers, full of enthusiasm and confidence in each other, and are pouring in materials about human nature so copious that the entire working life of a student may easily go to keeping abreast of the tide. The 'psychical researchers,' though kept at present somewhat out in the cold, will inevitably conquer the recognition which their labors also deserve, and

will make, perhaps, the most important contributions of all to the pile. But, as I just remarked, few of these persons have any aptitude or fondness for general philosophy; they have quite as little as the pure-blooded philosophers have for discovering particular facts.

The actual existence of two utterly distinct types of mind, with their distinct needs, both of them having legitimate business to transact with psychology, must then be recognized; and the only question there can be is the practical one of how to distribute the labor so as to waste it least and get the most efficient results. For my part, I yield to no man in my expectations of what general philosophy will some day do in helping us to rational conceptions of the world. But when I look abroad and see how almost all the fresh life that has come into psychology of recent years has come from the biologists, doctors, and psychical researchers, I feel as if their impulse to constitute the science in their own way, as a branch of biology, were an unsafe one to thwart; and that wisdom lies, not in forcing the consideration of the more metaphysical aspects of human consciousness upon them, but, on the contrary, in carefully rescuing these aspects from their hands, and handing them over to those of the specialists in philosophy, where the metaphysical aspects of physics are already allowed to belong. If there could be, after sufficient ventilation of the subject, a generally expressed consent as to the kind of problems in psychology that were metaphysical and the kind that were analogous to those of the natural sciences, and if the word 'psychology' could then be restricted so as to cover as much as possible the latter and not the former problems, a psychology so understood might be safely handed over to the keeping of the men of facts, of the laboratory workers and biologists. We certainly need something more radical than the old division into 'rational' and 'empirical' psychology, both to be treated by the same writer between the covers of the same book. We need a fair and square and explicit *abandonment* of such questions as that of the soul, the transcendental ego, the fusion of ideas or particles of mind stuff, *etc.*, by the practical man; and a fair and square

determination on the part of the philosophers to keep such questions out of psychology and treat them only in their widest possible connections, amongst the objects of an ultimate critical review of all the elements of the world.

Professor Andrew Seth has put the thing excellently in his late inaugural address at Edinburgh, on the Present Position of the Philosophical Sciences.[1] "Psychology," he says, "has become more scientific, and has thereby become more conscious of her own aims, and at the same time, of her necessary limitations. *Ceasing to put herself forward as philosophy*, she has entered upon a new period of development as science; and, in doing so, she has disarmed the jealousy, and is even fast conquering the indifference, of the transcendental philosopher." Why should not Professor Ladd, why should not any 'transcendental philosopher,' be glad to help confirm and develop so beneficial a tendency as this? In Professor Ladd's own book on *Physiological Psychology*, that "real being, proceeding to unfold powers that are *sui generis*, according to laws of its own," for whose recognition he contends, plays no organic part in the work,[2] and has proved a mere stumbling-block to his biological reviewers. Why force it on their attention, and perpetuate thereby a sort of wrangle from which physics and chemistry have long since emerged, and from which psychology, if left to the 'facts of experience' alone, promises so soon to escape?

Now the sort of 'fact of experience' on which in my book I have proposed to compromise, is the so-called 'mental state,' in whose existence not only common men but philosophers have uniformly believed. Whatever conclusions an ultimate criticism may come to about mental states, they form a practically

[1] Blackwood, 1891.

[2] I mean that such a being is quite barren of particular consequences. Its character is only known by its reactions on the signals which the nervous system gives, and these must be gathered by observation after the fact. If only it were subject to successive reincarnations, as the theosophists say it is, so that we might guess what sort of a body it would unite with next, or what sort of persons it had helped to constitute previously, those would be great points gained. But even those gains are denied us; and the real being is, for practical purposes, an entire superfluity, which a *practical* psychology can perfectly well do without.

admitted sort of object whose habits of coexistence and succession and relations with organic conditions form an entirely definite subject of research. Cannot philosophers and biologists both become 'psychologists' on this common basis? Cannot both forego ulterior inquiries, and agree that, provisionally at least, the mental state shall be the ultimate datum so far as 'psychology' cares to go? If the 'scientific monists' would only agree to say nothing of the states being produced by the integration and differentiation of 'psychic units,' and the 'transcendental metaphysicians' agree to say nothing of their being acts of spiritual entities developing according to laws of their own, peace might long reign, and an enormous booty of natural laws be harvested in with comparatively no time or energy lost in recrimination and dispute about first principles. My own volumes are indeed full of such recrimination and dispute, but these unfortunate episodes are for the most part incidental to the attempt to get the undivided 'mental state' once for all accepted by my colleagues as the fundamental datum for their science. To have proposed such a useful basis for united action in psychology is in my own eyes the chief originality and service of the book; and I cannot help hoping that Professor Ladd may himself yet feel the force of the considerations now urged. Not that to-day we *have* a 'science' of the correlation of mental states with brain-states; but that the ascertainment of the laws of such correlation forms the *program* of a science well limited and defined. Of course, when such a science is formed, the whole body of its conclusions will fall a prey to philosophical reflection, and then Professor Ladd's 'real being' will inevitably have the best possible chance to come to its rights.

One great reason why Professor Ladd cares so little about setting up psychology as a natural science of the correlations of mental with cerebral events, is that brain-states are such desperately inaccessible things. I fully admit that any *exact* account of brain states is at present far beyond our reach; and I am surprised that Professor Ladd should have read into my pages the opinion that psychology as a natural science must aim at an account of brain states exclusively, as the correlates of states of

mind. Our mental states are correlated *immediately* with brain states, it is true; but, more remotely, they are correlated with many other physical events, peripheral nerve currents for example, and the physical stimuli which occasion these. Of these latter correlations we have an extensive body of rather orderly knowledge. And, after all, may we not exaggerate the degree of our ignorance of brain states themselves? We don't know exactly what a nerve current is, it is true; but we know a good deal *about* it. We know that it follows a path, for instance, and consumes a fraction of a second of time in doing so. We know that, physically considered, our brain is only a mass of such paths, which incoming currents must somehow make their way through before they run out. We even know something about the consciousness with which particular paths are specially 'correlated,' those in the occipital lobes, *e.g.*, being connected with the consciousness of *visible* things. Now the provisional value of such knowledge as this, however inexact it be, is still immense. It sketches an entire programme of investigation, and defines already one great *kind* of law which will be ascertained. The *order in time* of the nerve currents, namely, is what determines the *order in time*, the coexistences and successions of the states of mind to which they are related. Professor Ladd probably does not doubt the nerve-current theory of motor habits; he probably does not doubt that our ability to learn things 'by heart' is due to a capacity in the cerebral cortex for organizing definitely successive systems of paths of discharge. Does he then see any radical reason why the *special time-order* of the 'ideas' in any case whatever of 'association' may not be analogously explained? And if not, may he not go on to admit that the most characteristic features of our faculty of memory,[1] of our perception of outer things,[2] of our liability to illusion,[3] *etc.*, are most plausibly and naturally explained by acquired organic

[1] Such as the need of a 'cue'; the advantages, for recall, of repetition and multiple association; the fact of obliviscence, *etc.*

[2] That the ideas of all the thing's attributes arise in the imagination, even when only a few of them are felt, *etc.*

[3] That, *e.g.*, the most *usual* (and therefore *probable*) associates of the present sensation are mentally imagined even when not actually there.

habitudes, stamped by the order of impressions on the plastic matter of the brain? But if he will admit all this, then the diagrams of association-paths of which he preserves so low an opinion are not absolutely contemptible. They do represent the *sort* of thing which determines the order of our thoughts quite as well as those diagrams which chemists make of organic molecules represent the sort of thing which determines the order of substitution when new compounds are made.

It seems to me, finally, that a critic of cerebralism in psychology ought to do one of two things. He ought either to reject it in principle and entirely, but then be willing to throw over, for example, such results as the entire modern doctrine of aphasia — a very hard thing to do; or else he ought to accept it in principle, but then cordially admit that, in spite of present shortcomings, we have here an immense opening upon which a stable phenomenal science must some day appear. We needn't pretend that we have the science already; but we can cheer those on who are working for its future, and clear metaphysical entanglements from their path. In short, we can aspire.

We never ought to doubt that Humanity will continue to produce all the types of thinker which she needs. I myself do not doubt of the 'final perseverance' or success of the philosophers. Nevertheless, if the hard alternative were to arise of a choice between 'theories' and 'facts' in psychology, between a merely rational and a merely practical science of the mind, I do not see how any man could hesitate in his decision. The kind of psychology which could cure a case of melancholy, or charm a chronic insane delusion away, ought certainly to be preferred to the most seraphic insight into the nature of the soul. And that is the sort of psychology which the men who care little or nothing for ultimate rationality, the biologists, nerve-doctors, and psychical researchers, namely, are surely tending, whether we help them or not, to bring about.

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ON SOME PSYCHOLOGICAL ASPECTS OF THE CHINESE MUSICAL SYSTEM.

II.

ACCORDING to Chinese tradition, the progression of fifths, which was the origin of their scale, was carried on by its inventors, Ling-lun and the Emperor Hoang-ti, until it yielded a system of twelve notes separated by hemitones, like the duodecimal chromatic scale of European music. This is the system of the twelve Lu, which according to Chinese ideas is the foundation of the whole art of tone, and which they recognize not only in theory, but in some of their instrumental forms.[1]

Let us suppose the derivation of pipes one from another by the two-thirds measurement, which gives first the five and then the seven step scale, to be continued until twelve pipes are formed, the derivatives being doubled as before whenever necessary to keep the whole series of sounds within an octave. The theoretical result of this process would be the following interval order:

	1st	8th	3d	10th	5th	12th	7th	2d	9th	4th	11th	6th
(cents) ·	114 ·	90 ·	114 ·	90 ·	114 ·	90 ·	90 ·	114 ·	90 ·	114 ·	90 ·	

consisting of Pythagorean semitones alternating with an interval almost exactly the size of the diatonic semitone, $\frac{16}{15}$ (= 112 cents); the compass of the whole twelve notes being a Pythagorean semitone less than an octave. The sounds of twelve pipes obtained one from another by this extension of the fifth progression constitute what is known in Chinese theory as the system of the twelve Lu. The hemitones of the order are regarded as

[1] Notably the Ché (an instrument like the zither) as described by Amiot (p. 58) and the Pien-ching and Pien-chung (chimes of bells and resonant stones) as described by Van Aalst (pp. 49, 54).

equal, and it is held to include all the possible distinctions of pitch within an octave, deriving this reputation doubtless from the circumstance that to Chinese ears it appears as the limit of the derivation by fifths.[1] For were a thirteenth pipe constructed, its note would fall theoretically 24 cents, or the eighth of a tone above the octave of the initial note; and practically, it may be presumed, would be considered by a primitive instrument maker to be that octave. The powers of the process to engender a series of notes within an octave would therefore, we may suppose, be held to have exhausted themselves in the sequence of twelve just given.[2] To these the Chinese give the following names in the order of the series of fifths: (1) Huang-chung, (2) Lin-chung, (3) Tai-tsu, (4) Nan-lu, (5) Ku-hsi, (6) Ying-chung, (7) Jui-pin, (8) Ta-lu, (9) I-tse, (10) Chia-chung, (11) Wu-i, (12) Chung-lu. Arranged in order of pitch upwards within the octave the sequence becomes: Huang-chung, Ta-lu, Tai-tsu, Chia-chung, Ku-hsi, Chung-lu, Jui-pin, Lin-chung, I-tse, Nan-lu, Wu-i, and Ying-chung.

But it was not alone the method of deriving these twelve sounds, the interval order which they should embody, which was fixed by their inventors. Their absolute pitch was determined also by the choice of a standard intonation for Huang-chung, the note of generation. This Ling-lun made by one account to coincide with the murmur of the spring whose bamboos furnished the first Lu, and which proved to be the source of the Hoang-ho river. Under successive dynasties various prescriptions of the most elaborate and exact character as to

[1] Amiot, pp. 64, 87.

[2] If we carry on the fifth progression by taking account of the small interval of 24 cents above the octave of the initial note brought in by the twelfth fifth, no further interval of different size will be introduced until the seventeenth fifth is reached, which gives a note 66 cents below the octave of the starting-point. An extension of the progression to include sixteen fifths was employed by the Arabian theorists of the fourteenth century and earlier, and gives their seventeen step octave (Helmholtz, Tonempfindungen, 4 edn., p. 458). This more complex theoretical construction was, according to Mr. Ellis (tr. of Helmholtz, p. 281), a mathematical determination of an already existing interval order. The lutist Zal-zal (ninth century) had introduced certain new notes into the scale, produced apparently by the trisection of the quarter of a string; and approximations to these were yielded, it proved, by this exclusion of the fifth progression.

the size and make of the Huang-chung pipe have been applied in the settlement by law of this corner-stone of the Chinese musical system. The pitch now recognized in China as the standard for Huang-chung is given by van Aalst (p. 13) as a close approximation to the present **d′** of the European scale.

To the primitive system of the Lu were eventually added another at the octave above and another at the octave below, but the compass of this scale being greater than that of the voice, Prince Tsai-yu (1596) reduced it from thirty-six to twenty-four Lu by admitting only the lower six of the upper Lu and the upper six of the lower Lu.[1] This restriction gives a scale having a compass of one semitone less than two octaves, from the sixth semitone below the primitive Huang-chung to the fifth semitone above its higher octave, the pitches of the whole system of twenty-four Lu being approximately those given in the accompanying scheme:

						PRIMITIVE LU.																	
JUI-PIN	LIN-CHUNG	I-TSE	NAN-I-LU	WU-I	YING-CHUNG	HUANG-CHUNG	TA-LU	TAI-TSU	CHIA-CHUNG	KU-HSI	CHUNG-LU	JUI-PIN	LIN-CHUNG	I-TSE	NAN-LU	WU-I	YING-CHUNG	HUANG-CHUNG	TA-LU	TAI-TSU	CHIA-CHUNG	KU-HSI	CHUNG-LU
♯ g	a	♯ a	b	c′	♯ c′	d′[2]	♯ d′	e′	f′	♯ f′	g′	♯ g′	a′	♯ a′	b′	c′	♯ c″	d″	♯ d″	e″	f″	♯ f″	g″

From the table on page 63 it appears that the Samien songs of our collection cover a compass of pitch identical with this to within a semitone, their highest note being **g″** and their lowest **g** instead of **g♯**. The songs of the horn-player also are included within the same range.[3]

That this coincidence is the result of a conformity in this music to the prescriptions of Chinese theory is rendered prob-

[1] Amiot, p. 110.

[2] = 301.5 vibrations.

[3] Judging from Amiot's account of the Che (p. 58), he seems to regard the full two octaves as the true compass of Chinese music. The Che, which has twenty-five strings covering, like our songs, a range of twenty-four semitones, in his opinion is "the most perfect of Chinese instruments, since it includes in itself the whole extent of their musical system."

able by the fact that the notes most frequently used in both horn and Samien songs are those which fall within the primitive system of the Lu, from d' to $c''\sharp$. As in the theory so in the practice of Chinese music so far as the evidence of our collection of songs goes, this octave takes the position of first importance.

We have seen that the Chinese regard their scales as results of the same process of the derivation of pipes which, carried as far as primitive workmen can, produces the system of the Lu. In this account of the origin of their five and seven step octaves, the Chinese base them upon an achievement of theoretical grasp and practical skill which must certainly be assigned to a much later date than the appearance of scales in their music. Moreover, the choice of five or seven steps is still unexplained, for the fifth progression affords scales of any number up to twelve. Evidently the opposite derivation is the true one. Just as the Pythagorean use of the progression of fifths did not create, but was the result of the Greek scale of his time, so in China the same progression became the foundation of theory through the fact that by its use an accurately determinate form could be given to the scale of five alternate approximate tones and thirds (and perhaps of seven approximate tones) which was already in use among them.[1] For these ancient octave forms themselves another origin must be sought: we may, perhaps, surmise that they are what may be called the natural precipitates of all simpler melody. That these natural interval orders can be formed by a progression of fifths is a wonderful fact: wonderful, too, it must have been to these primitive theorists to see the generative powers of the fifth progression exhaust themselves in the formation of an interval order of twelve equal semitones. In their eyes the fifth progression became the natural foundation of all music. From it their scales came to be regarded as derived, and, to its limit, the system of the twelve Lu, an origin not alone mathematical was ascribed; they were obtained by Hoang-ti from the mysterious symbols

[1] In the Arabian scale just mentioned, the fifth progression is again applied to determine an interval order otherwise produced.

of the Emperor Fu-hsi (B.C. 2852), and were heard by Ling-lun in the songs of birds and the voices of a remote race of men.[1]

Since in ancient Chinese theory the scale was determined by the first seven members of the same progression which carried through twelve terms gave the system of the Lu, each of the first seven Lu became intimately associated in their music with the note of the scale produced by the same number of fifths. These associations are exhibited in the following schemes of the fifth progression, first as a continuous sequence and then brought within the octave:[2]

1	2	3	4	5	6	7	8	9	10	11	12
H-CH	L-CH	T-T	N-L	K-S	Y-CH	J-P	T-L	I-T	C-HCH	W-I	CH-L
K	T	CH	Y	K	pK	pT					

1	8	3	10	5	12	7	2	9	4	11	6
H-CH	T-L	T-T	CH-CH	K-S	CH-L	J-P	L-CH	I-T	N-L	W-I	Y-CH
K		CH		Ki		pT	T		Y		pK

From the earliest times it appears to have been admitted also that besides the primitive coincidences here indicated each one of the notes of the scale might be identified also with any one of the other eleven Lu, giving in all eighty-four correspondences (or modulations, as Amiot calls them). The correspondence of any one note of the scale with a given Lu, determining those upon which the others must at the same time fall, the number of different sets of simultaneous coincidences was twelve. But these were not viewed simply as identifications of the scale with different sets of Lu. A notion of the coincidence of its notes with the first seven added itself to all of them. This appears from the nomenclature adopted for those seven different embodiments of the scale in the Lu which were regarded as the fundamental ones. These were the cases in which

[1] Van Aalst, p. 7. We may, perhaps, regard this account of the experiences of Ling-lun as a poetical rendering of the truth that the emanation of its higher fifth from a given note is not alone a mathematical deduction, but a fact of actual hearing whenever, by harder blowing, a pipe giving its fundamental tone (for instance c), or its first overtone (c′) begins to produce instead its second overtone (g′).

[2] They are given in the form of circular diagrams by Amiot, Plate XVIII, Fig. 13. "Hoang-chung aided and sustained by Chung-lu and Lin-chung." Fig. 12, a "Hoang-chung aided and sustained by Ta-lu and Ying-chung."

the note of generation, Koung, coincided with any one of the first seven Lu, and they were named from the notes of the scale that fell upon these when Koung was at Huang-chung. Thus the identification of Koung with the Lu Huang-chung was called a modulation or intonation in Koung, its identification with the Lu Ku-hsi a modulation in Kio, since when Koung is at Huang-chung, Kio is at Ku-hsi. Although for the cases when Koung falls on one of the intermediate Lu no nomenclature referring to the primal form of coincidence seems to have been used, they must nevertheless have been conceived as intermediate modulations, and it is for this reason perhaps that we hear less of them.

Thus with the idea of each of the twelve possible embodiments of the scale in the Lu became combined the notion of another, in notes bearing definite relations of pitch (which might be unison) to those of the first. Now this conception of the relation in pitch between two embodiments of the same scale is exactly what is known in European music as a Key. The various possible identifications of the scale with different selections of Lu came therefore through the mingling with them all of the notion of one primal scheme of coincidence, to be so many keys. Had an association between the scale and the first seven Lu not been formed in the Chinese mind, had the various embodiments of the scale in sets of Lu been conceived each for itself, their music would have possessed what might be called a system of transposition, but not a system of keys. To the conception of Key the idea of the definite reference of one set of pitches embodying a scale to another is essential.

A relation emerges whenever we regard any two things from the point of view of either. The two relations of fatherhood and sonship appear in considering the same two beings according as we regard one with reference to the other or the second with reference to the first. The embodiment of the scale from the point of view of which we consider another we shall here call the referred scale, the embodiment with regard to which we consider it the scale of reference. The relation between them may be conceived after two manners which we may call respec-

tively individual and representative. Either we may recognize the relation subsisting between each individual note in the one embodiment and one in the other, or we may take a single note of the scale as standard of comparison and regard the interval between its two positions as the representative of the same interval between all other pairs of corresponding notes. In either case the recognition of unison (identity) as a possible form which the relations concerned may take is necessary for systematic completeness.

The nomenclature we have just described indicates that it is the latter simpler manner of regarding keys that obtained in China. The compound relation of pitch in whose recognition a Key consists was there conceived by means of that between corresponding notes of the two embodiments of the scale concerned. In naming the fundamental keys of their music, the Chinese used Koung as a note of comparison and stated the interval between its two pitches by giving the note of the scale of reference upon which the Koung of the referred scale falls.

In both of the two theories of music which have in succession developed themselves upon European soil, that of the later Greeks and that of modern times, the element of key has a conspicuous place. In the former the representative conception of key, which had been developed in China, received another embodiment; and this still persists in the music of modern Europe. But as we shall see, the origin of the modern system of modulation in the conception of small displacements in pitch in the notes of a diatonic order has given it a character fundamentally individual.

That the practical limit of the fifth progression is an octave of twelve approximate hemitones was known to the Greek theorist, Aristoxenus (fourth century B.C.); and like the Chinese the later Greeks laid down as the entire system of distinctions of pitch to be recognized in their music, a series of twelve notes separated by hemitones and repeated in the octave above and the octave below.[1]

[1] This range of pitch was increased by three hemitones in the system of fifteen scales of transposition (Tonoi or Tropoi) recorded by Alypios (360 A.D.).

Again as in China, the notes of the diatonic scale were associated primarily with certain of the elements of this order, and with the same elements as in the system of the Lu, Fa (= Koung), being identified with the lowest pitch of the whole three-octave interval order. Exactly as in China, again, the Greeks permitted all possible relative positions of the scale and the duodecimal octave; and since the same conception of their primary relation (Fa = lowest note of the octave) that persisted in China formed a part also of the Greek theory, their transpositions of the scale came to be united likewise into a duodecimal system of keys. To this striking list of theoretical similarities must be added a no less striking difference between Greek and Chinese nomenclature. Although the keys to be named were identical, the intervals involved between corresponding notes being those of unison or of one, two, *etc.*, up to eleven hemitones, yet the method of naming them was, in a manner, opposite in the two systems. The Chinese proceeded by designating the note of the scale of reference upon which, or (hypothetically) the notes upon the semitone between which, a certain note (Koung) of the referred scale should fall. The nomenclature of the Greeks was derived from that of their ancient Schemata, or, as we should now call them, modes. These were the different sequences of tones and hemitones between octaves of each different note of the scale. Giving to the notes of the diatonic order their modern names, between octave repetitions of Do the following sequence of tones and hemitones is included: T T H T T T H; between octave repetitions of Sol, the following: T T H T T H T. The first was called by the Greeks the Lydian scheme, the second the Hypo-Phrygian: and other like names were given to the others. Since their keys involved an interval of pitch of a certain number of hemitones between two embodiments of the scale, the note Fa of the scale of reference fell in each either upon some note of the referred scale, or halfway between two. In the former case the key was given the old name of the scheme or mode bounded by that note; in the latter case the name of the mode bounded by the next note below the intermediate pitch with which Fa coincided, a vari-

ation in the name distinguishing this key from the one in which Fa actually coincided with this note. The keys of the former class correspond with those in the Chinese system in which Koung in the referred scale falls on one of the first seven Lu; and those of the latter class to its coincidences with the intermediate members of the series. Just as in Chinese music the seven modulations in the first seven Lu — that is, in the notes of the primal scale — have been recognized from antiquity, according to Prince Tsai-yu, as the fundamental ones; so in Greece the keys in which Fa in the scale of reference coincided with the outlines of the seven ancient modes in the referred scale were the earlier and principal ones, and those in which it fell between them, keys of later growth. As in the Chinese, so in this nomenclature, regard was had to the coincidences of a certain note in one of the two related scales with various notes of the other, and the same note (Fa, Koung), was used as the note of comparison in both systems; but while in China the name came from that note of the scale of reference with which the Koung of the referred scale coincided (modulations in Chang, pien-Tche, *etc.*), in Greece the name came from the mode upon whose boundary note in the referred scale the Fa of the scale of reference fell (Dorian, Lydian, *etc.*, Tonos or Tropos).

In the representative names of keys used with its individual nomenclature, the modern world has let fall the Greek usage and taken up that of the Chinese, making changes therein which are the expression of a fundamentally different attitude of the musical consciousness toward the scale. These changes we shall find, and the fact is a most surprising one, have had a counterpart in the process which has brought the newer (or mediæval) musical system of the Chinese out of their ancient (or immemorial) theory of the art.

At the downfall of the Græco-Roman civilization, a few fragments of its theory of music were preserved for the uses of the Christian church. These were a two-octave diatonic scale beginning and ending on the note La (with its higher interval, La-Si, divided into two hemitones), and the ancient schemes or sequences of tones and hemitones between the various notes of

this scale and their octaves, within one or other of which all ecclesiastical melodies were restricted.[1]

From the beginning of the tenth century the notes of this interval order were designated by the letters of the Latin alphabet, the lowest note being called A, and the successive higher ones B, C, *etc.*, notes at octaves receiving the same name. The intermediate note of the higher octave (corresponding to the flatted pien-Tche of the Chinese scale, and a survival, as we know, from the Greek tetrachord synnemenon) came, therefore, to fall between A and B. To designate it, B was again used, the two B's being distinguished by writing the lower one round, ♭ (B rotundus), and the upper one square, ♮ (B quadratus). In the development of the art during the later middle ages and in Reformation times, further notes intermediate to those of the old Greek order came into use. But the authority of classic and Catholic tradition was such that these were at first supplied by the singers without being written (Musica Ficta or Falsa); and when later it became the habitude to express them in notation, they were looked upon as derived either from the diatonic note above by a displacement like that which would produce ♭ from ♮, or from the diatonic note below by a displacement which would produce ♮ from ♭, and were designated by affixing to the letter denoting the diatonic step in question

[1] This fundamental interval order of mediæval music was at the time of Guido d' Arezzo (eleventh century) extended by the addition of a note (Sol) below the lowest La, and of notes Si, Do, Re, Mi, above the highest; giving the following sequence of tones and hemitones:

ANCIENT SCALE.

(Sol) · T · T · H · T · T · H · T · T · T · H · T · T · H · T · T · T · H · T · T · (Mi)

In order to facilitate the memorizing of this scale, its twenty notes (the intermediate note being counted with Si) were associated with the tips and joints of the thumb and fingers of the left hand, proceeding downward from the tip of the thumb as Sol, and then upward on each of the fingers, the twentieth note, Mi, being conceived to float in the air, over the tip of the middle finger. This mnemonic device was called the Guidonian hand, and is mentioned here only to call attention to a like use of the joints and tips of the fingers among the Chinese, who associated the root of the ring finger with Huang-chung, that of the middle and first fingers with the second and third Lu, and successive adjacent joints and finger tips with the others, the twelfth Lu falling on the root of the little finger. (Amiot, p. 127, and Plate XVII.)

these two signs, 𝄫 and 𝄪, which had already come to be written ♭ and ♯.

The key system of modern European music rose out of this conception of the displacement of notes of the diatonic order. Since each one of the new notes introduced into the previous scale A to G was looked upon and named as a derivative from one of its notes, each of the new embodiments of the diatonic order which it became possible to form with their aid carried with it a reference to this fundamental series, and became therefore a key.

It proves that in the series of alternate groups of two and three tones separated by hemitones, which constitutes the diatonic scale, there is a certain note (*viz.* that below the group of three tones, or F), and only one, whose hemitone displacement upward will leave the order of the diatonic form; and one, and only one (*viz.* that above the group of three, or B), whose displacement downward will have the same result; further, that the diatonic character of the order will be left unchanged when a certain pair, a certain group of three, *etc.*, up to a certain group of six, are all displaced upward, and when a certain other pair, group of three, *etc.*, up to a group of six are all displaced downward; and that no other hemitone displacements will result in the diatonic order except that of all seven notes up and that of all seven notes down. The number of possible different embodiments of the diatonic scale which can be obtained from a given one by such hemitonic changes in its notes is therefore fourteen: those in which a certain one, two, *etc.*, up to all seven of its notes, are moved upward a hemitone, or, as we say, sharped, and those in which a certain one, two, *etc.*, up to all seven of its notes, are moved downward a hemitone, or, as we say, flatted.[1]

[1] The only hemitone displacement upward of a single step in the interval order

T H T T T H T T
A B C D E F G A

which will result in the same sequence of tones and hemitones is that of F. The F of the new order is the C of the original one, and its displacement creates a second derivative formed from the original by two displacements upward, F and C. The displacement upward of C is impossible without that of F if the derivative order is to remain diatonic, for it results in the separation of two hemitones by a single tone only. The F of the second derivative is the G of the original, and its displacement gives a third derivative produced from the first by three displacements, F, C, G. The displacement of G without that of C is impossible for

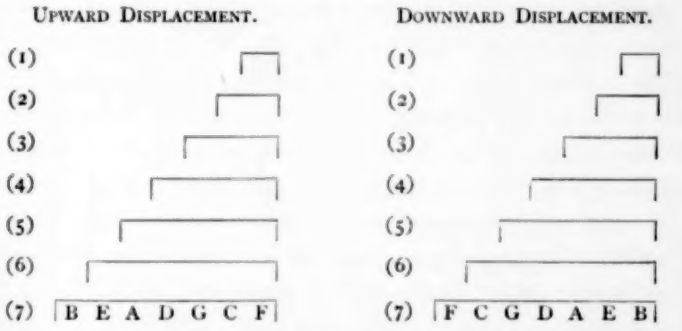
The formation of keys by the unrestricted use of hemitone displacements of the notes of the ancient diatonic order A to G resulted, therefore, in a system of fourteen. To these the ancient scale itself became added as a fifteenth key, illustrating the limiting case in which the displacements were zero in number.

The nomenclature of this system of modulation is in the first place individual. We speak of the keys of one flat or five sharps, implying that the other notes of the order are neither flatted nor sharped, and thus asserting a relation of hemitone

the same reason as before. A fourth, fifth, sixth, and seventh derivatives result from the displacement respectively of D, A, E, and B, the displacement of each being impossible without that of the foregoing note of the series. All the notes of the scale have now been displaced.

In like manner, the displacement downward of one and only one note (B) of the diatonic order results in the same sequence of tones and hemitones. The B of this first derivative is the E of the original order, the displacement of which gives a second derivative; as before, the displacement downward of E is impossible without that of B. The third to the seventh derivatives are formed by the additional displacements downward of A, D, G, C, F, respectively, that of each demanding that of the previous note of the series.

The formation of these fourteen derivative orders is given in the following scheme:



No other sets of displacements than the fourteen here specified will reproduce the diatonic order. For consider any such set consisting of n displacements: either it contains the n^{th} letter from the right in one or other of these two series; in which case it will not form a diatonic order unless the other $n-1$ letters are those to the right of this in the series in question; or it contains one of the letters to the left of this n^{th} letter, and, lacking this, does not therefore form a diatonic order.

The determination of the fundamental scale as Pythagorean, Harmonic, or Tempered, gives three varieties of this system of keys into whose discussion we need not here enter.

divergence in certain pairs of notes of the two embodiments and a relation of coincidence in the remainder.[1]

The representative nomenclature of the modern key system is distinguished from that of the later Greeks and that of the ancient Chinese by the recognition of two notes as alternative standards of comparison, neither of the two being that below the three tones (Fa, Koung), which was the note used both in Greece and in China. These two notes are the note below the group of two notes (called Do or C in the mediæval scale) and the note between the upper two of the group of three (called La or A in the mediæval scale). This change is a victory of practice over theory. To the musical theorist, Fa, as the note of generation, the origin of the scale, is its limiting and ruling one. To the listener to music any note on which his mind has learned to dwell becomes beginning and end, foundation and summit, of the scale. This practical predominance of a note is in contemporary discussion called Tonality.[2]

In the course of the development of Catholic Plain Song mediæval music-hearers acquired the habit of regarding either of the notes Do, Re, Mi, Sol, La, of the diatonic scale as the predominant one of a composition, this place being never assigned to Si, and but rarely to Fa. We have already argued in seeking to explain the flatting of pien-Tche that a feeling of the tonality of the theoretically prominent note Fa is incompatible with the maintenance of Si in its normal position. A like remark applies to Si in its turn, and to this cause is due the avoidance by the mediæval musicians of these two tonalities.[3]

Finally, in modern times, three of the five commonly used in church music were abandoned, and musical textures fell into

[1] The character of different keys is made by Hauptmann (Harmonik und Metrik, § 279) to depend upon these conceptions of upward and downward displacement. "Every key which in comparison with another contains notes chromatically raised will seem higher and tenser; and one which differs from another through chromatically lower notes will seem deeper, quieter, more relaxed."

[2] The term used by Helmholtz (Tonempfindungen, 4th edn., p. 395), following Fétis, in the sense of a "definite reference of all the notes of the scale to a single principal and fundamental note, the Tonic."

[3] The inharmonious relation of these two notes is expressed in the mediæval proverb, "Si contra Fa diabolus est in musica."

two grand varieties, one appealing to the listener's grasp of the note Do, and the other to his grasp of the note La as the important one of the diatonic order. The former is called the major, the latter the minor mode. All of the fifteen keys may occur in either mode. In the representative nomenclature of the one the key is named from the note of the scale of reference (or the displacement of one of its notes) with which the Do of the referred scale coincides; in that of the other, from the note with which La coincides. We speak therefore of a composition as in the key of F or F♯ major, meaning that the notes which it uses form a diatonic scale whose Do (or note below the group of two tones) is the note F or its displacement F♯; or as in the key of F or F♯ minor, meaning that in the embodiment of the scale in notes partly chromatic in which it is written, this note F or its displacement F♯ takes the place of La (or note between the upper two of the group of three tones).

This concentration of modern music upon two varieties of texture, major and minor, has been interpreted as a result of the substitution, at the time of the Reformation, of a music of Chords (Harmony) for the music of simultaneous melody (Polyphony) which had grown up in mediæval Europe.[1] The musical products of the Chinese consist entirely, according to our present information, either of pure melody, or of melody carried in octaves, notes at the fifth or fourth being occasionally added. No music of chords appears to exist among them, nor even a music of different simultaneous melodies. Nevertheless, what information we possess about later Chinese musical theory gives reason to believe that the Chinese recognize either of two notes as the fundamental one in their diatonic scale; that these two are Do and La; and that in theory, therefore, music in China exhibits the same division into a major and a minor system which it appears to have reached in Europe only after a long course of development into an entirely different form from that of the Chinese art. If we adopt the hypothesis that this dual

[1] Helmholtz shows (Tonempfindungen, 4th edn., p. 489) that when Do and La are taken for principal notes, the diatonic order yields a greater variety of more available chords than when any other notes are chosen.

structure was transmitted to China from Europe, it must, if we trust their accounts, have been assumed by European music at a time long anterior to the rise of the harmonic style. Whether original or acquired, therefore, the existence of this characteristic in Chinese musical theory gives reason for the belief that other causes beside their harmonic capacity may be operative in directing the growth of diatonic music into two forms, major and minor.

During the middle ages a new set of names was given to the notes of the Chinese scale, according to Van Aalst in the fourteenth century and by the Mongols. Among them was one which Amiot writes Kong, Van Aalst giving the same spelling Kung to both this name and the ancient one called by Amiot Koung. The new name Kong was applied to the note anciently called Yu, three hemitones below Koung. Of the habitude of the flatted pien-Tche, which Van Aalst tells us was also derived from the Mongols, and has since become general in China, Amiot says nothing. We have ourselves found it in all the records of Chinese scales (Barrow, Van Aalst, Ellis, and our own songs) in which we have been able to establish the identity of the notes at all. Making this change in the position of pien-Tche, the scale appears with its mediæval and ancient names as follows:

Mediæval:	Ho	Sse	Y	Chang	Tche	Kong	Fan	Ho
	· (T) ·	(T) ·	(H) ·	(T) ·	(T) ·	(T) ·	(H) ·	
Ancient:	Koung	Chang	Kio	pTche	Tche	Yu	pKg	Koung

Through this change, the scale still remaining diatonic, Koung is no longer the note below the group of three, but that below the group of two tones, and Kong is not, as Yu was, the note intermediate to the group of two, but that between the upper two of the group of three. In a word, Koung has become Do, and Kong has become La: the ancient nomenclature marks out the European major; the mediæval, the European minor, mode.

The similarity in their Chinese names renders it antecedently probable that the two notes Do and La have in later times shared between them the position of theoretical primacy

anciently possessed by Fa alone. While on this point Amiot is again silent, Van Aalst prints in Chinese characters (with a translation) the flute part of a Spring Hymn to Confucius, together with a heading which it seems hardly possible to doubt determines the key of the piece by naming the note of the scale of reference on which the Kong (formerly Yu) and not the Ho (formerly Koung) of the referred scale falls. The conclusion of the heading runs in Van Aalst's translation: "When employing Chih (Tche) to intone a tune we must exclude, leave aside the notes Kung (Yu) and Yi (Kio). Forming the key of Chih (Tche), using Kong (Yu) as the note of comparison, this proves to be the case: but not so when Ho (Koung) is used for the keynote, as the following schemes show:

Kong as keynote: K · CH · Ki · · T · Y · · K
CH · Ki · · T · Y · · K · CH

Koung as keynote: K · CH · Ki · · T · Y · K
· · T · Y · · K · CH · K

We may accordingly interpret this heading as indicating the use of Kong instead of Koung as keynote. That Koung continues to exercise this function is expressly stated by Van Aalst, who gives an instance of its employment in the music of the Stone-chime in the same hymn to Confucius. We may therefore conclude that the dual system of major keys, or keys of Do (Koung, C) and minor keys, or keys of La (Kong, A) that is now exemplified in European music, is a fact also of present Chinese theory.

But further, the remainder of the heading of the Spring Hymn contributes evidence showing that beside using Do and La as alternative notes of comparison or keynotes, the Chinese make them the bases of alternative systems of modulation, in one of which the Koung of the scale of reference and in the other its Kong (or Yu) coincides in pitch with the primal Lu, Huang-chung. The indication is contained in the words with which the heading begins, — "Chia-chung acting as Koung." For Chia-chung, being the fourth Lu, if Koung coincide with

it, Yu comes to fall upon Huang-chung. The key of Tche, which the heading goes on to specify, is then a key referring to a primitive scale in which not Koung but Kong coincides with the primal Lu. If this surmise is correct, the Chinese system of modulation has a complication not existing in our own, and which may be expressed in European terms by the supposition that our musical notation should represent alternative intonations a minor third apart, so that the same pitch could be called either A or C. The relation of pitch between scales embodying the same key in the two systems is that between the scales of reference themselves, and is expressed in the following scheme:

Mediæval:	Y		pK	K		CH		Ki	pT		T		Y
Ancient:	K		CH		Ki	pT		T		Y		pK	K

It is such a relation between two Koungs that is illustrated in the transposition from Man-nen-fōn to Long-how-sa; and we may infer that in the scales of these two compositions we have the same key given in each of the two systems of modulation, the ancient or major system of Koung, and the mediæval or minor system of Kong.[1] If we assume that the chromatic note in the scale of the Gie-erh and the Kuantzu was introduced to make this transposition possible, the construction of these two instruments becomes evidence that the distinction of major and minor in Chinese music is not a matter of pure theory, but a factor in existing musical practice.

Let us suppose a flute or horn incorporating within a range of ten or twelve notes one of the keys of the mediæval system; for example, Koung = **g**, as is common in our songs. If it were desired to perform in the same key in the ancient system the notes which it would be of principal importance to add would be **g♯** and **c♯**, as is shown in the following scheme:

Mediæval:	T		Y		pK	K		CH		Ki	pT		T	Y		pK	K
	d′		e′		f′♯	g′	(g′♯)	a′		b′	c″	(c″♯)	d″	e″		f″♯	g″
Ancient:		pK	K		CH		Ki	pT		T		Y		pK	K	CH	

[1] The key may be regarded either as that of Chang major, or as that of pien-Koung minor.

The result of leaving pien-Koung to be produced by the harder blowing of the former Tche would be to make it a note intermediate between Yu and Koung; and this supposition may take its place beside Mr. Ellis's mechanical theory of the three-quarter tones as another possible hypothesis of the origin of this peculiarity of the Chinese scale. The intermediate intonation of pien-Koung is on this view, like the rest of the Chinese musical system, the outgrowth of performance not on stringed instruments, but on pipes; and performance, moreover, principally pentatonic, since it is the subsidiary importance of pien-Koung that renders unnecessary its presentation in the ancient key by a special note. The pitch of the note is regarded on this hypothesis as a mark left on the Chinese scale by the duality of key structure which we have reason to suspect is fundamental in Chinese music.[1]

Since **c♯** represents a pentatonic note in the one scale, and **c** only a pien in the other, a natural simplification of the scale of the instrument would be the sacrifice of **c**. With this change the scale supposed is that of the Kuantzu, excepting that by a further and less defensible simplification, **f♯**, upon which pien-Koung falls in the mediæval scale, is abandoned in the lower octave, and Chang of the ancient scale left to be represented by **g**. To judge from the notes used in Man-nen-fŏn and Long-how-sa, other devices have been employed in adapting the Gie-erh to give a key in both systems. The note **g♯** has been added, but not **c♯**, the ancient Yu being produced by the harder blowing of **c**. The mediæval pien-Koung has apparently been made an intermediate note (**f̄**) perhaps after the analogy of the

[1] The habitude of the intermediate pien-Koung, although not mentioned by Van Aalst, can be inferred from a note appended to his translation of the flute part of the hymn before mentioned. It is in the minor (or Kong) key of Tche (as we have seen), the pien of the scale being omitted. From Van Aalst's note we learn that the pitch of Koung is between one and two semitones below Chang. Since, as the scheme herewith shows, the Chang of this key corresponds to Koung and its Koung to pien-Koung,

pT · T · Y · pK · K · CH · Ki pT
T · Y · · · K · CH · Ki · · T

this remark determines the pien-Koung of the scale of reference as at the intermediate intonation.

resultant pien-Koung of the ancient scale. This equalization of the (mediæval) intervals Yu–pien-Koung and pien-Koung,–Koung has apparently misled our performer into playing the ancient Kio as **g** instead of using **g♯**, the extra note provided for the purpose, the latter becoming then an alternative pien-Tche. He has endeavored, moreover, to enlarge the (ancient) intervals, K–CH–Ki by depressing **e** (Koung) to **d̄♯** and **f̄** (Chang) to **f**. The note **d** then becomes the customary intermediate pien-Koung without alteration. The curious scale of Long-how-sa thus appears as an unskilful use of not altogether perfect devices incorporated on the Gie-erh for the performance of a given key in both the systems of Chinese modulation.[1]

A further inquiry remains to be made regarding the Chinese system of modulation. In European music the keynote is also a Tonic: besides its position of primacy as note of comparison in the determination of keys, the Do or La of the scale is apt to appear in a melody at the first accented beat, and with special frequency thereafter: its upper fifth (or dominant) is apt to be used at points of rest in the music, and the note itself at the close.[2]

To the question whether Chinese music exhibits this characteristic of tonic structure the answer suggested by a first glance at our collection of songs is a negative one. There is no note which is unequivocally defined as the axis of the music

[1] In his accounts of Chinese musical history Père Amiot often refers to the want of comprehension in later times for former achievements of theory and practice. In Prince Tsai-yu's time (1596) the scale once heptatonic had simplified itself to five notes. One of Amiot's learned Chinese friends said of ancient music, "All our books speak of it in terms of the loftiest praise, but they teach us at the same time that we have lost much of the excellent method which our ancestors employed to bring forth their marvellous effects." From the first to the sixth century music was generally neglected in China. "At that time the discovery was made of several chimes of bells (embodying the system of the Lu), and the Emperor put them into the hands of the officers in control of the music of his palace, with orders to make use of them; but since the ancient method was forgotten, the musicians employed but seven bells in each chime, the remaining five gaining the name of mute bells" (p. 46).

[2] Helmholtz (p. 410) describes the tonic demand of the European musical consciousness as follows: "that the whole mass of notes and harmonic complexes should be placed in close and distinct relationship with a freely chosen Tonic note; that the whole mass of notes in the piece should be developed out of this and be brought back again to it."

in any of them. An impression of want of unity, doubtless in part due to this cause, seems in general to be produced by Chinese music. Barrow calls their melody "an aggregation of harsh sounds," and Ambros speaks of it as "well-nigh devoid of sense and connection." Yet a closer examination of our songs brings to light a tendency to the embodiment of a certain form of less pronounced tonic structure. In most of them the note of the scale on which the composition ends has also been somewhat more frequent than the others during its course. Moreover, in these cases it is either the note a fifth above, or the note a fifth below, the supposed tonic (its dominant or subdominant), which is apt to be the next most prominent note. The songs showing this *quasi*-tonality are given in the following list, together with the note acting as tonic in each:

Say-quaw-chung	Tche (d′)	Long-how-sa (Samien)	Yu (e′)
Han-Kang	"	Hop-wong-hin	Kio (b′)
Gie-wong	"	San-fa-tiu	Tche (d′)
Kwan-mōk	"	Song-ting-long	Koung (g′)
Lo-ting-nyang	Chang (a′)	Sai-tōn	Tche (d′)

All the notes of the scale excepting the pien being represented here, and Tche (which in these songs has the pitch **d′** of the primal Lu, Huang-chung) more often than the others, the inference suggests itself that it may rather be to this absolute pitch **d′** than to any particular pentatonic note that the Chinese tend to attribute tonic functions. The two pien, which are always subsidiary, are the notes called Fa and Si in the European scale. It was these two notes, it will be remembered, that were excluded from the position of predominant note in the music of mediæval Europe, and as far as our songs are evidence, exactly the same degree of freedom of tonic choice exists in Chinese musical practice.

In the course of the present study we have had occasion to note an unexpected number of points of contact between the European and the Chinese musical systems. The fixation of a seven-step scale by the progression of fifths, and its extension to form a duodecimal octave, have been recognized as independent achievements of the Chinese since the work of Père

Amiot. We have found further in the philosophical interpretation of this process in ancient China a suggestion of ideas current in our own time and race; and in the Chinese resolution of the problem of a music upon this foundation, several striking likenesses to that reached by the European musical consciousness. A device of detail like the Guidonian hand, proves to have its counterpart in China: perhaps also the "participatione" of the mediæval Italians. The same step (La–Si, Kio –pien-Tche) of the identical diatonic scale of Europe and China came to be equally divided in the two systems by a note which in China finally took the place of the next higher, while in Europe the two remained to form the germ of the modern chromatic scale. The transposing scales of ancient Greece seem to have been based originally upon an interval order identical with the ancient three-octave extension of the Lu, and to have constituted a system of primary and secondary keys like that of China, the nomenclature of the two being in a manner opposite. The Chinese method of naming is adopted in the key system of modern Europe, although the different origin of the latter results also in another which we have called individual. The distinction fundamental in European music since the Reformation, of a major and a minor scale, seems to have been incorporated in Chinese theory during mediæval times. We have seen reason to suspect, on the other hand, an extension of this distinction to the absolute pitch of the scale of reference such as has no counterpart in European music. Finally, our songs indicate that Chinese compositions may sometimes be conceived as written in the Tonic style, and that the same tonalities are recognized therein as obtained in European music of the middle ages.

Although the music we have been studying is that of a third of the population of the globe, it is still in great measure unknown to the rest of the world. The conclusions in regard to the Chinese system of keys which we have here based on the few data accessible to the Occidental student, are to be regarded not as established results, but as suggestions for further inquiry.

APPENDIX. — ON THE PHONOGRAPHIC STUDY OF MUSICAL PERFORMANCE.

The reproduction of sound is effected in the phonograph by contact between a needle fixed in a diaphragm and a wax cylinder on which an inscription has previously been made by another needle. Raising a lever raises the needle off the wax, and the arm bearing the diaphragm being movable, another contact may be made at any desired point on the cylinder. This makes it possible either to begin or to interrupt a phonographic reproduction at any instant of the flow of sound reproduced. Should we wish to grasp better what we have just heard, raising the lever while we move back the arm repeats it at once; should we wish to compare it with sound from another source, simply raising the lever silences the instrument. The phonograph used in this investigation was one of those run by electrical power, the rapidity of revolution of the cylinder being regulated by a screw increasing or decreasing the strength of the current entering the motor. The movement of this screw raises or lowers the pitch of the music reproduced by the phonograph at the same time that it quickens or slackens its time. In practice, the adjustment of the screw proves to be a very delicate means of temporarily tuning a phonograph note to any desired pitch within a considerable compass.

It is evident that if the sounds obtained from the phonograph can be relied upon as an accurate reproduction of those to which it has been exposed, the instrument is an invaluable apparatus for the investigation of primitive music. The phonograph brings vanished tones to actual hearing again just as photographs and casts bring visibly and tangibly before us the looks and shapes of things far away. By its aid the investigator can examine the sounds themselves of which a primitive musical performance has consisted, and in his study, at his leisure; he is no longer restricted to inferring the practice of the art more or less doubtfully from documentary evidence or from instrumental forms: he is no longer even dependent on his observations of such primitive performances as he may have been fortunate enough to hear, or on his memory of them. The phonograph places the music itself permanently at his command. Its reproductions may be indefinitely repeated; many parts of these inscriptions have in our examination been traversed perhaps a score of times; but notwithstanding these repetitions it has been impossible to detect the least deterioration in the reproduction. Whatever the life of a phonograph cylinder may be, it is far longer than suffices for the most careful examination of the inscribed sound. Moreover, as we have seen, the music preserved by the phonograph can be interrupted at any point. Both of these essentials of a stricter study are impossible in the case of actual playing or singing by primitive musicians. Our Chinamen, although no troublesome demands were made upon them, already began to grow restive during the second interview.

It cannot be claimed that the performance of the phonograph in its existing state leaves nothing to be desired. A harsh, scraping noise, very perceptible, although not loud enough to obscure the inscribed sound, is, as far as

my experience goes, the constant accompaniment of a phonographic reproduction; and noises of other kinds occasionally make themselves heard.

Nor is the reproduction of musical tone in the phonograph by any means a perfect one. Beauty of timbre is very largely lost therein. This is, perhaps, in part due to the rapid quavering to which a phonograph note seems always subject, and which is very likely both a very small and quick waxing and waning of intensity and a very minute wavering in pitch, the latter being the result of the former. Although for this reason a phonograph note is never critically agreeable, yet tone-color of marked character remains readily recognizable therein. In this respect the phonographic cylinder outdoes the photographic plate which has never been able as yet to reproduce visual color at all, but at most only the distribution of light in the subject.

But these impurities of tone seriously detract from only the æsthetic, and not the scientific, value of a phonographic reproduction. It remains to ask whether the phonograph accurately reproduces the sequence of pitch in a music. If it does this, it will also reproduce its scheme of time, the other fundamental element in musical texture. Evidently in this respect the accuracy of the instrument is considerable: else the vocal selections, cornet solos, brass band pieces, *etc.*, *etc.*, which we hear to our greater or less satisfaction in phonographic exhibitions, would be beyond its powers. In order to determine this point more exactly, a test was made with the specially tuned harmonium invented by the late A. J. Ellis, and known to the readers of his translation of Helmholtz's *Sensations of Tone* as the Harmonical. One of the intervals embodied between adjacent notes of this instrument is that called the Syntonic Comma, $\frac{81}{80}$, a difference of pitch of only 22 cents, less than a quarter of a tempered semitone. The Harmonical was set against the table on which the phonograph was placed, in such a manner that it could be played upon with the right hand while the left managed the phonograph. The latter instrument being adjusted to run so that the needle took about two minutes to traverse the cylinder, an inscription covering nearly the whole of it was taken of a single note of the Harmonical, alternated with various others and held at each recurrence during several seconds. In the reproduction this repeated note was tuned by a careful adjustment of the screw so that it fell between those notes of the Harmonical which are 22 cents apart, and, as far as could be judged, was as much above one as below the other. In the majority of several trials on different days, it preserved this intermediate position at each recurrence not only to the end of the cylinder, but to the end of several successive reproductions of the melody. At no time did it move in the course of one reproduction far enough from this intermediate position to be identified in pitch with either of the neighboring Harmonical notes: although on two occasions it seemed to run through this interval of about the eighteenth of a tone in the course of three continuous repetitions of the reproduction. The result of this test indicates that under favorable conditions the phonograph run by electric power at a medium rate can reproduce a sequence of pitch which covers the cylinder, correctly to within an almost imperceptible fraction of a tone.

The songs of our collection have been written down a few notes at a time by ear, with an occasional reference to one of Messrs. Mason and Hamlin's

smaller harmoniums, to one of whose notes one of the prominent notes of the song was first approximately tuned, and which was set like the Harmonical within reach of the right hand. In the critical examination it was endeavored to make and keep the tuning of this note accurate; for such a study as has been made of these reproductions takes a much longer time than that during which the above test indicates the phonograph maintains its pitch accurately. Nevertheless, having carefully tuned a prominent note of the song to one of the harmonium notes at the beginning of the examination, in several cases where the reference back to this note was omitted, the two proved indistinguishable at the end perhaps of half an hour, and only in two or three cases was there doubt thrown on the work by a noticeable alteration of the phonograph pitch. It is still to be recommended that in such examinations the note tuned to the harmonium should be revisited every few minutes, to be sure that no aberration has taken place. The phonograph being accurately tuned, the pitch of each successive note of the song which exhibited that quality distinctly was then determined by cutting off the sound from the instrument the instant that note had been struck, and immediately comparing it with notes of the harmonium. In most cases, divergencies from any harmonium semitone came to light; the proportion of these divergencies from the nearest semitones above and below was then sought to be estimated as nearly as might be by repeated trials.

In order to gain some idea of the correctness with which the course of pitch constituting a melody can be determined in this way from a phonographic reproduction when its notes diverge in various amounts from the notes of the instrument of comparison, use was again made of the Harmonical. This instrument contains between the notes C of the four lower octaves the following complicated scale:

INTERVALS BETWEEN SUCCESSIVE NOTES IN CENTS.

c	$d^\flat$	d	$e^\flat$	e	f	g	$a^\flat$	a	$g^{\flat 1}$	$b^\flat$	b	c
182		22	112	70	112	204	112	70	85	49	70	112

An inscription was taken of forty-eight Harmonical notes in which each of those between c' and c'' occurred several times. This was then carefully written down according to the above method, using the *harmonium* as the instrument of comparison. The initial note of the sequence, which was the harmonical d', was tuned in the reproduction to $d^\sharp$ of the harmonium. These two sounds being about 125 cents apart in absolute pitch, the notes of the reproduced melody were by this means thrown in among the harmonium semitones in such a way that it was impossible to predict where they ought to have come, and the mind was left entirely free to determine where they did come. The different estimates in the case of recurrences of the same note (however far apart in the melody) proved in general closely similar. In nine out of the thirteen different notes used in the sequence, the various judgments fell within a twentieth of a tone (or ten cents) of one another; in the other

[1] $g^\flat$ is tuned as the natural seventh (ratio 4:7) of the c below.

four they fell 15, 23, 25, and 28 cents apart. Taking the centre of gravity of the various estimates as the indicated pitch for each note, the following interval order resulted:

Real:	(182)	(22)	(112)	(70)	(112)	(204)	(112)	(70)	(85)	(49)	(70)	(112)
	c	d♭	d	e♭	e	f	g	a♭	a	g♭	b♭	b	c
Estimated:	195	25	100	94	115	173	118	85	83	58	94	98

In nine of these intervals the errors are not over 15 cents, or the fourteenth of a tone; in two they are 24 cents, or the eighth of a tone; and one reaches 31 cents, or the sixth of a tone. It may be mentioned that this Harmonical reproduction was hardly as loud and clear as those of most of the songs of our collection.

These tests of the phonograph and of the ear give a basis for considerable confidence in the novel method employed in this investigation of primitive musical performance.[1] The phonograph seems under favorable conditions to be able to reproduce a sequence of intervals with an accuracy which may be regarded as well-nigh perfect, and which one would call truly wonderful were not all wonder in connection with this instrument. Furthermore, the result of the above experiment with the intricate interval order of the Harmonical seems to indicate that a good musical ear can by this method of estimated divergences of the phonograph notes from those of an instrument of comparison gain an idea of a course of pitch presented in phonographic reproduction which will be correct to within small fractions of a tone. We may claim, therefore, for records of primitive performance made in this way from the phonograph, an accuracy sufficient for purposes of close study, and which is much greater than could be attained without its aid. In the *Lehre von den Tonempfindungen* (4th ed., p. 435) Helmholtz quotes the observation of a friend, an "ausgezeichneter Musiker," in regard to the singing of the Dervishes in Cairo. That which at first was thought to be a false intonation, he finally convinced himself was the quarter tone (about 50 cents) of the Arabian scale. Although to notice in performance a musical habitude as delicate as this would demand an acute musical sense, in the detailed study it is possible to give a phonographic reproduction it would reveal itself at once even to an observer of ordinary powers. The only references we have found by previous students to the division of a semitone in Chinese music, so conspicuous in the intermediate pien-Koung of our songs, are the incidental remarks of Van Aalst already referred to.

[1] The application of the phonograph to the exacter study of music was first made, as far as I know, in my examination of Indian songs from the Zuñi Pueblo, of which the results were published last May in the first volume of "A Journal of American Archæology and Ethnology." (Boston: Houghton, Mifflin & Co.)

DISCUSSIONS.

DR. MÜNSTERBERG'S THEORY OF MIND AND BODY AND ITS CONSEQUENCES.

DR. MÜNSTERBERG has given us in the course of his psychological writings[1] a very brilliant and striking presentation of what Professor James calls "the conscious-automaton theory." I propose in the following article to give a summary of this and of his resulting theory of will, followed in each case by criticism.

If we ask, says Dr. Münsterberg, what it is which is immediately given in experience, we find that it is neither a material world nor a soul, but simply consciousness — the consciousness of a definite content. This content we are led by an unconscious impulse to separate into two series — a series of perceptions of matter, and a series of mental states; and the question is, how are these series related to each other?

The popular theory conceives the relation as if the soul were situated at a point in the brain, where on the one hand it underwent changes caused by bodily processes, and on the other was able by a mere exercise of volition to impart to the body an impulse of motion. This theory, though sufficient for the needs of every-day life, overlooks that necessity of thought which obliges us to seek the explanation of every physical phenomenon in previous physical phenomena, and which finds its expression in the principle of the conservation of energy. "It is certain that every voluntary act is far more than a physico-chemical process; but equally certain that physical science, in explaining voluntary action, must attend solely to the physico-chemical process." "If a mental act could be wholly or partly the cause of a motion of matter, the lawful relations between kinetic and potential energy would be destroyed." The contraction of a muscle is nothing but a motion of matter; physical science must therefore assume it to be completely explicable as the result of prior material conditions.

The law of the conservation of energy is not a mere induction from experience, but a necessary presupposition of thought with regard to

[1] Dr. Hugo Münsterberg, Privatdocent an der Universität Freiburg (Baden), Die Willenshandlung: ein Beitrag zur physiologischen Psychologie, Freiburg, 1889, pp. 100–111; Beiträge zur experimentellen Physiologie, Freiburg, 1890, Heft 1, Einleitung: Bewusstsein und Gehirn, pp. 6–19; Ueber Aufgaben und Methoden der Psychologie, Leipzig, 1891, pp. 13–37.

natural events. If it were only an induction drawn from the observation of non-organic processes, we might well anticipate an exception to its universality where matter borders upon mind. That it does not express an observation, but a postulate which we bring with us to the explanation of nature, appears when we consider what is meant by explanation.

To explain means to resolve the complicated phenomena we meet with in experience into simpler, more perspicuous ones. We understand a physical event when we have analyzed it into the elementary processes that make it up. If we wish to explain these, we resolve them into others still more elementary, till we reach the simplest processes conceivable, namely such as are continuously imaginable. These last cannot be analyzed into others still simpler, for what is imaginable is incapable of further analysis. But the causal impulse does not require that they should be further analyzed; for we think we discover in them a certain intrinsic necessity which makes further explanation superfluous. These simplest processes are described in the physical axioms. When an event is shown to be a consequence of the physical axioms, we regard it as explained.

A complicated process is thus explained by being resolved into simple processes which are continuously imaginable and necessary. The entire cosmic process would be completely explained, on its physical side, if we could resolve it without remainder into an infinity of simple processes, each continuously imaginable and necessary. We should then be able, if our minds were only vast enough, to picture to ourselves the entire course of nature in all its details as one continuous panorama, in which every transition would appear to us to be a necessary one.

Since the explanation of natural processes presupposes their continuous imaginability, it is evident that any psychophysical hypothesis which assumes the presence of *lacunæ* or discontinuities in nature violates the fundamental postulate upon which physical science depends. That postulate, commonly known as the law of the conservation of energy, forbids us to suppose that a motion can arise out of nothing or pass away into nothing. "That motion arises out of motion is in itself no more intelligible than that motion arises out of nothing; but only the former is continuously imaginable, only the former therefore explicable."

The conservation of energy therefore forbids us to suppose that any physical energy is lost when sensory nerve-impulses give rise to a sensation, or that any energy comes into existence when a volition is followed by a nervous discharge into the muscles. We must rather suppose that the sensory nerve-impulses produce commotions in the cortical nerve-

cells, and that these manifest themselves in consciousness in the form of a sensation; and that the motor nerve-impulses are caused by other commotions in the cortical nerve-cells, which last manifest themselves in consciousness in the form of a volition. We must suppose, in short, that physical processes constitute a locked system, every subsequent state of which is fully accounted for by the immediately preceding state; that the nervous system is a highly complex mechanism for adapting the movements of an animal to environing conditions in a manner useful to the animal; and that consciousness is a parallel manifestation, concomitant to certain processes in the highest nerve-centres.

We thus have two series of events running parallel to each other — a continuous series of physical events, and side by side with it an interrupted series of mental events, corresponding to certain portions of the physical series. The doctrine thus far developed is that of a psychophysical parallelism. Now physics in its sphere can never explain the mental series, any more than psychology in its sphere can explain the physical series. Yet the two sustain the most intimate relations to each other, for no mental events ever happen, so far as our experience goes, except in connection with physical events. We therefore need an hypothesis to account for this connection.

Such an hypothesis must either conceive the two series as co-ordinate, or regard one of them as subordinate to the other. They might, in the first place, be conceived to be co-ordinate, yet in other respects independent, each series taking place according to laws of its own. But this hypothesis would afford no explanation of their remarkable correspondence — no explanation of the fact that every bodily disturbance of sufficient intensity is accompanied by a sensation, and every emotion and volition by bodily changes. Our knowledge of the spatial world and our ability to act in it depend upon this fact, which cannot therefore be an accident. The hypothesis in question is thus as good as none at all.

A second hypothesis, first proposed by Leibniz, assumes the two series to be co-ordinate, but supposes them to have been created and set running by a cosmic Intellect, like two clocks which always correspond, yet do not mutually influence each other. This hypothesis — that of pre-established harmony — only repeats the problem in another form; for the relations between such a cosmic Intellect and the world of matter constitute a far more difficult psychophysical problem than the one we are seeking to solve.

Turning therefore to the hypothesis which regards one series as subordinate to the other, we assume in the first place, with Aristotle, Spinoza, Hegel, von Hartmann, and Wundt, that the mental series is the condition of the physical.

A serious objection to this hypothesis lies in the discontinuity and irregularity of the mental series. Every hour of deep sleep interrupts it. At one moment we have only a few dull, monotonous sensations, at another a multitude of clear and articulate ideas, accompanied by conflicting emotions. These incalculable fluctuations make it impossible for us to regard the content of one moment as the adequate cause of the content of the next. Even if memory, thought, and will could be explained as results of previous states of consciousness, no explanation could be given of such an absolutely new fact as a fresh sensation or perception.

The only conceivable way of constructing a continuous causal series on the mental side, so as to explain all mental states as effects of previous mental states, would be to assume the existence of mental states of which we are not conscious, and use these to fill out the *lacunæ* of consciousness. This assumption is, as a matter of fact, illegitimate; for it belongs to the very essence of a mental state to be present to consciousness, and an unconscious mental state therefore involves a contradiction in terms. But if for argument's sake we nevertheless make it, and suppose that not only the molecular motions that go on in our brains but all motions of matter are accompanied by some kind of mental state; if, that is to say, we look upon the material world as only an outer shell covering an infinitude of conscious, semi-conscious, and unconscious mental states — it still remains true that these states are all *mine;* no provision has been made for the existence of another consciousness than my own; and I am confined in the barrenest solipsism.

In short, a consistent spiritualistic theory of the relations of mind and body is simply impossible, and we therefore turn to the only hypothesis which remains — the hypothesis according to which the physical series is the condition of the mental. This means that physical events take place independently, according to laws of their own, and that a few of them — namely, certain events in the cortex — are the indispensable condition for the occurrence of mental events. The psychophysical materialism which this doctrine asserts is to be sharply distinguished from philosophical materialism, or the doctrine that the ultimate reality of the world is matter, a frequent but wholly unjustifiable inference from it.

Psychophysical materialism is often supposed to be correctly expressed in the statement that brain-events *cause* states of consciousness. This is an illegitimate use of the word *cause*. For the statement would mean, if true, that what was at one moment a molecular motion in the brain was at the next a state of consciousness, and that the transition from one to the other could be continuously imagined — a manifest absurdity. Causality can only connect physical with physical, not phys-

ical with mental. The correct statement is that brain-events are the indispensable *condition*, or *substratum*, of mental events.

In what sense is explanation possible in psychology, on the materialistic psychophysical theory? Owing to the characteristics of the mental series mentioned above, — its discontinuity and irregularity, and the frequent appearance of states that are entirely new, — it is obviously impossible to follow the analogy of physical explanation and interpret the mental state of one moment as the adequate cause of the mental state of the next. But a different kind of explanation is possible. "While I write this, tone-sensations invade my consciousness; some one in the next house begins to play upon the piano. Is this intrusion of tone-sensations inexplicable? Psychologically it is, for they were not preceded in consciousness by a content from which I could have inferred their approach. But every mental event is concomitant to an event in the brain, which latter is the necessary result of preceding physical events, and as such perfectly explicable." We may therefore say that a perception or other mental event is explained when it is shown to be the concomitant of a brain-event the occurrence of which at the given moment is intelligible as a result of the physical conditions. The lawful sequences of physical phenomena thus furnish a satisfactory explanation of the otherwise inexplicable sequences of mental phenomena.

In commenting upon the foregoing discussion, I shall speak first of the general theory of parallelism, and later of the special form of it which Dr. Münsterberg professes in his doctrine of the dependence of mind upon body.

The theory of parallelism appears to those who accept it to be a necessary inference from the law of the conservation of energy. If this is, as Helmholtz says, "a universal law of all natural phenomena,"[1] it must apply to the motions of molecules in the brain as much as to similar motions outside the body. This is no more than we should expect in view of the mechanical theory of life. But if the conservation of energy applies to brain-events, these must form a locked system, and states of consciousness must accompany without modifying them.

In view of these considerations, it is surely surprising that Professor James in his chapter on mind and body should not even have mentioned the law of the conservation of energy. Professor Ladd at least tells us clearly what he thinks of it, for in his recent *Outlines* he describes it as "only a valid and useful working hypothesis under which we may bring certain classes of physical phenomena."

[1] Vorträge und Reden, I, 151.

The German psychologists take a different view of the matter, to judge from the following passages from a recent article by Professor Wundt:[1]

> I have often explained why I regard an *influxus physicus* in the sense of Cartesian dualism as an impossibility, and believe the conception of a parallelism between mental and physical processes to be required by empirical psychology. . . . The Cartesian theory is untenable because it assumes a causal connection between entirely incomparable facts. A sensation can no more be explained by a motion than a motion by a sensation.
>
> It goes without saying that an external movement as a physical process can only be explained by a previous physical process, as for example by a sensory excitation; and that, consistently with the principles of natural causation, there can be no motion for which such an explanation must not be postulated.

Dr. Münsterberg has rightly seen that the possibility or impossibility of interaction between mind and body depends upon the meaning and implications of the relation of cause and effect. While his account of this matter will perhaps prove more suggestive than convincing, it at least seems to me to contain the antidote to a current abuse of the Humian doctrine of causality, to which I wish to devote a few words.

Defenders of interaction tell us that Hume, Kant, and Lotze have shown that we never discern a causal bond uniting the cause with the effect.[2] In the sense that we never perceive an identity between cause and effect, or a transference of energy from one to the other, or anything more than a mere empirical succession, this is doubtless true. But the hasty inference that the relation between cause and effect is impenetrable to reason, in such a way that any cause might conceivably be joined with any effect, is entirely unwarranted. For there exist at least a great number of cases in which cause and effect are connected by qualitative and even quantitative relations which make it appear by no means so irrational that one should be succeeded by the other. One of the most remarkable achievements of modern science consists, for example, in the proof that physical heat is a mode of motion of the minute particles of bodies, and that where ordinary motion is transformed into heat there is an exact equivalence between the amount of motion lost and the amount of heat evolved. In this case, cause and effect are not only qualitatively alike, but an exact quantitative relation exists between them. Now these qualitative and quantitative relations constitute a phenomenal bond be-

[1] Philosophische Studien, VI, 3 (1890): Zur Lehre von den Gemüthsbewegungen.

[2] James, Psychology, I, 137: "But one has no right to pull the pall over the psychic half of the subject only, as the automatists do, and to say that *that* causation is unintelligible, whilst in the same breath one dogmatizes about *material* causation as if Hume, Kant, and Lotze had never been born."

tween cause and effect which remains entirely unaffected by the Hume-Kant-Lotzian arguments.

It is doubtless true that the bare notion of causality contains no suggestion of such an equivalence. For all that, the demonstration of quantitative relations between successive events gives us a far more perfect understanding of their connection than the mere knowledge that they stand related as cause and effect. Once the possibility of such an understanding is suggested, it must, however seldom realizable, remain ever after the beau-ideal of the physicist. If, however, investigation proves it to be realizable in the great majority of cases, — and this, I take it, is the actual fact, — a strong presumption is raised with regard to any particular physical event that it can be shown to be connected with previous physical events by relations of quantitative exactitude.

Now the form in which this ideal has been realized is this, that the amount of energy contained in the cause has been found to be equal to the amount contained in the effect. But if the cause always contains the same amount of energy as the effect, the sum of all the causes in the universe must contain the same amount of energy as the sum of all their effects, and the quantity of energy in existence must be constant — which is the law of the conservation of energy.[1]

If now from the causal relations of physical events *inter se* we turn to those between physical and mental events, it is evident that nothing resembling physical explanation is here possible. There can be no exact quantitative relation between cause and effect, for the two are incommensurable. We cannot picture to ourselves the cause passing over into the effect, for they belong to different orders of existence. "The passage from the physics of the brain to the facts of consciousness is unthinkable." The cause belonging to a given effect can at most be *indicated*, but the connection between the two cannot be *explained*.

Of course it is by no means inconceivable that a certain event in the nervous centres should be the indispensable condition of a sensation, or that a volition should be the indispensable condition of a nervous discharge into the muscles. But no such phenomenal bond can exist as that which connects two physical events, and we can only say that the cause is invariably succeeded by the effect. To say that the nervous event actively *produced* the sensation, or that the volition actively produced the motor discharge, would be to assume the existence of precisely that unseen bond which Hume, Kant, and Lotze have disproved.

We may correctly say that a physical cause produces a physical effect; the fall of a stone, for example, being a mode of motion, may as properly be said to produce that other mode of motion which we call heat,

[1] Wundt, Die physikalischen Axiome, Erlangen, 1866, pp. 128–132.

as a shoemaker with a given quantity of leather may be said to produce a certain number of pairs of shoes. But we cannot properly say that a physical cause produces a mental effect, or *vice versa*, because no such quantitative relations connect the cause with the effect as in the former case. We cannot speak of production, but only of invariable succession. It is entirely credible that a nervous impulse coming inwards along a sensory fibre should have a side-effect in the shape of a sensation; but why the physical energy embodied in the nerve-impulse should on that account be debarred from producing all the physical effects which it would have produced had there been no sensation, and why these in turn should not go on to produce all their natural effects in conformity with the laws of physics, it is difficult to understand. In the same way, it is entirely credible that the event in the cerebral cortex which causes a motor discharge should have been immediately preceded by a volition; but how the presence of the volition absolves us from the duty of explaining this cortical event by means of previous cortical events, and supposing the energy contained in it to have been derived from them in a manner strictly consistent with the law of the conservation of energy, it is difficult to understand. If we were obliged to choose between explaining the motor discharge by means of previous cortical events or by means of the antecedent volition, we should have good reason to hesitate. But this is not the alternative; the motor discharge cannot be explained by means of the volition, which can at best be only its invariable antecedent; and the question simply is, whether we will explain the motor discharge in the usual way, by means of previous physical events, or will decline to explain it at all. If we take the latter course, we not only reject the only explanation of which the case admits, but load ourselves with the gratuitous hypothesis that a quantity of physical energy suddenly came into existence.

Whether advocates of the common-sense theory believe they have immediate experience of the mind's power to inaugurate physical changes, or are influenced by ethical and æsthetical considerations, the idea of the physical efficacy of mind involves precisely that fallacious notion of an invisible causal nexus which Hume, Kant, and Lotze strove to overthrow. Once eliminate this imaginary bond between mental cause and physical effect, and we are left with a bare empirical succession, for which it is evident that the parallelism theory makes as ample provision as the theory of common sense.

It is unnecessary here to make more than a passing reference to the wealth of physiological facts, such, for example, as the effects upon the mental functions of injuries, poisons, intoxicants, hard labor, insufficient food, *etc.*, which find a more natural explanation on the theory of parallelism than on that of common sense.

Although the parallelism theory is correct as far as it goes, there are two empirical facts connected with the relations between mind and body of which it contains no suggestion. The first of these is the fact that, while the physical series is continuous, the mental one is interrupted and incomplete, only a minute fraction of all the processes that go on in the physical world being accompanied by consciousness. It appears as though physical facts could exist without mental, but not mental facts without physical; as though, in other words, physical facts constituted the basis upon which mental facts rest. This appearance is strengthened by the second fact referred to, namely, that any interference with the normal course of the cerebral processes is at once followed by alterations or even by total suppression of consciousness; as where lesions of circumscribed cortical areas abolish certain classes of memories without affecting others. It is the desire to offer some explanation for these two empirical facts which leads Dr. Münsterberg to his doctrine of the dependence of mind upon body.

From the point of view of empirical investigation there is little to be said against this doctrine. Nerve-physiologists, experimental psychologists, and scientific alienists employ it constantly as a sort of working hypothesis, and their right to employ it is beyond question. At the same time they cannot be too often reminded that it is only a brief, compendious phrase to express the empirical facts respecting the relations between body and mind — the fact of parallelism, the fact that the mental series is interrupted, and the fact that interference with the physical series is accompanied by alterations of the mental — not a theory aiming to *explain* these facts.

When the doctrine is propounded, as it is by Dr. Münsterberg, for the purpose of explaining the empirical facts, it becomes an unmistakable piece of metaphysics; for it is impossible to explain the empirical relations of mind and body without transcending the limits of experience. What is more, it is a piece of very questionable metaphysics; for the doctrine that mental events depend for their existence, not upon the unknown reality that appears to us under the form of a material world, but upon these material appearances themselves, is indistinguishable from philosophical materialism, and open to all the objections that lie against that doctrine.

While abandonment of the common-sense theory must influence one's whole psychological attitude, evidently no theory will be more affected than that of the will. In volition we have as nowhere else the feeling of our own activity; and the question arises, how this feeling can be reconciled with a theory which regards all mental states as the passive concomitants of events in the brain. Dr. Münsterberg has given an an-

swer to this question in the course of his book on the *Voluntary Act*, of the relevant parts of which the following is a brief summary.

Physiologically considered, the voluntary act is the final outcome of a physico-chemical process taking place in the sensory-motor arc; that is, in the apparatus composed of sense-organs, centripetal nerves, brain, centrifugal nerves, and striate muscles. By means of this apparatus the innumerable stimuli which act upon the animal body elicit from it those external movements which are useful for its preservation. The sum of the stimuli, taken in connection with the structure and momentary condition of the nervous apparatus, must furnish a complete explanation of every resulting movement. Such a useful movement is known in physiology as a reflex action. Every act, even the free voluntary act, is, physiologically speaking, a reflex action, differing from the spinal reflex of the brainless frog only in its vastly greater complexity.

In the normal frog with nervous system intact, the after-effects of previous excitations preponderate among the conditions producing movement, and the movement seems uncaused because the visible stimuli form so small a part of the total cause. Just as the eye and ear enable the organism to be affected by objects not in immediate contact with it, so memory — the power of the brain to associate to an impression the image of another impression experienced with it before — enables the organism to adapt its movements to objects before they have as yet entered the field of sense. The power of the human brain, finally, to analyze its impressions into their elements and recombine these into new complexes, enables it to form complexes corresponding to objects never actually experienced; so that civilized man is able to act with reference to objects the most distant in space, the most remote in time, or altogether ideal.

But the usefulness which characterizes animal movements demands some explanation. How could a nervous apparatus come into existence so constructed that, despite the infinite variety of external conditions, it should respond at every moment with a useful and appropriate reaction? The answer to this question is furnished by the Darwinian theory, which tells us that the nervous apparatus came into existence and was gradually perfected by means of natural selection. If natural selection explains the origin of the digestive apparatus, it can explain that of the nervous apparatus also; for the latter is no more useful than the former. But since natural selection explains the origin of the nervous apparatus, and since, given the apparatus, a definite complex of conditions necessarily evokes a definite external movement, it follows that every voluntary act, regarded solely on its physiological side, is completely explicable in accordance with the principles of physico-chemical science.

Approaching the problem from the psychological side, we find, if we

look solely to the facts of consciousness, that what is given is not an individual substantive will, but only a great number of particular volitions. As every mental state, according to physiological psychology, consists ultimately of a complex of sensations, we have to inquire what is the special quality, intensity, and emotional tinge of the sensations that compose a volition, and in what manner they are combined. The most distinctive trait of volition is the feeling of activity. We have this feeling not only in external action, but also when we guide the course of our thoughts or turn our attention this way or that. What is the basis of the feeling of activity? There are two elements common to all states in which we have it.

(1) When I have a perception or a mental image, or when one idea calls up another by a customary association, I have no such feeling. But when I cannot think of something, search for it, and try to remember the connection in which I heard it, till finally it occurs to me, I feel that I have brought it to light by my own activity. I have the same feeling of activity when I pass from premises to conclusion, or when I attend to an interesting perception or idea and strive to hold it fast. Now in all these cases there is this common element, that the content of the subsequent state was implicitly contained in the antecedent state.

(2) A second element common to all mental processes in which we feel ourselves to be active is the presence of muscular tensions in different parts of the body: in the first place, tensions in the muscles of accommodation of the eye, ear, and tongue, when we attend to images derived from those senses; and in the second place, tensions in the muscles of the forehead, jaws, neck, and some other parts of the body. The net product of all these tensions is what we call the "feeling of effort"; similar tensions accompany all intense bodily activity; and because they also accompany certain processes of thought, we feel ourselves in these processes to be mentally active. Voluntary thought is thus characterized by the two facts, first, that the subsequent mental state is ideally anticipated in the antecedent state, and secondly, that the transition from one state to the other is accompanied by muscular tensions.

Let us now consider the external voluntary act. If I move my arm slowly and attend to my feelings, I am conscious of a peculiar impulse immediately preceding each muscular contraction, which I feel to be the cause of the latter. If I temporarily paralyze my arm by compression of the nerve and repeat the experiment, no muscle contracts, but I distinctly feel the impulse referred to. If, finally, I crook the first two joints of my forefinger as far as I can, at the same time bending the other three fingers as far as possible backward, and now will to crook my forefinger still further, I am unable to do so, further flexion

being rendered impossible by tendinous resistance; yet I feel the peculiar impulse so acutely that, if I do not actually look at my hand, I am inclined to believe that my finger has moved. The impulse in question is the so-called "feeling of innervation," and we have to ask what is its nature.

The answer is, that it is nothing more nor less than the antecedent mental image of the movement to be executed. We constantly receive nerve-impulses by the sensory nerves which have their source in the skin, joints, tendons, and muscles; these impulses fuse into an aggregate sensation which informs us about the varying positions of our limbs. Like other sensations, this leaves behind it a mental image, and it is this mental image, brought up as the last result of the play of association, which immediately precedes the external movement and constitutes the "feeling of innervation."

Thus in external voluntary action as in voluntary thought, the ideal anticipation of a mental state precedes its actual realization. The two likewise agree in being accompanied by tensions in the muscles of the head. Our feeling of freedom in volition depends upon our consciousness that the effect perceived to be accomplished coincides with the ideal anticipation that preceded it. A voluntary act may thus be described as the perception, often accompanied by feelings of muscular tension, of an accomplished effect which was previously anticipated in idea.

Our analysis of volition thus discloses no elements which are not either sensations or reproductions of sensations; none, that is to say, not strictly co-ordinate with sensations like blue, hard, sour; and since sensations are readily conceivable as the passive concomitants of brain-events, it follows that the phenomena of volition are entirely compatible with the theory of parallelism.

In the introduction to his *Contributions* Dr. Münsterberg approaches the same question from a slightly different point of view. He inquires how those higher intellectual processes which Wundt groups together under the head of "apperception" are to be reconciled with the parallelism theory. It appears to be a fact that our ideas do not merely come and go of themselves, but that consciousness has the power to interpose and direct their movement, as a general directs the movements of troops, — joining, separating, and arranging them, holding back this and dismissing that, comparing one with another, selecting some from amongst the rest, and displaying now an increased, now a diminished activity. Now, while it is easy to conceive a physical basis for the sensational content of consciousness, it is difficult to conceive one for the activities of consciousness itself, and the question arises, how these are to be harmonized with the parallelism theory.

Dr. Münsterberg's answer to this question is contained in the query whether the activities usually ascribed to consciousness cannot be equally well interpreted as mere passive changes taking place in the conscious content. On this view it would be the conscious content itself which now expands, now contracts, now entirely disappears; the elements of which flow together or apart; and which, by means of a definite complex of sensations and mental images, produces the impression of an arranging, comparing, selecting activity.

The contrast between this and the ordinary view will be apparent if we reproduce Dr. Münsterberg's account of attention. The ordinary view supposes that in attention the sensation or idea attended to suffers no change, but that consciousness itself increases in distinctness; while the accompanying sensation of strain is explained as an immediate consciousness of the mental activity involved. Dr. Münsterberg, as we know, explains the latter sensation as of muscular origin, and as due to tensions partly in the muscles of accommodation of the sense-organs involved, partly in the muscles which serve to fixate the head and to regulate respiration. The action of these muscles, particularly the more exact adjustment of the muscles of accommodation, has the effect of increasing the sharpness and distinctness of the individual sensations and ideas that make up the conscious content; and this result is at the same time helped on by the exclusion of inhibitory ideas and the reinforcement of favoring ones. Attention thus involves no activity of consciousness itself, but consists solely in changes taking place in the conscious content according to the laws of association, and is therefore perfectly intelligible on the parallelism theory.

But if consciousness has no power to interfere with the movement of our ideas, this is at least not true of the Ego, the most characteristic of all mental facts, which manifestly exerts a predominating influence in our mental life. What is to be made of the Ego upon the parallelism theory?

The word *Ego*, as commonly employed, designates two entirely distinct mental facts, which we may call the subject Ego and the empirical Ego. The subject Ego is identical with that abstraction of consciousness which may be distinguished in thought from the sensational and ideal content, but which cannot exist separately from it. The Ego in this sense possesses no physical substratum. Psychologically, it is the mere passive spectator of its momentary content, which it is powerless to act upon or alter in any way; while epistemologically, it is the absolute precondition of knowledge and of existence. The empirical Ego, on the other hand, which is the Ego we think of when we think of ourselves, the Ego which governs the course of our ideas, the Ego which acts and suffers, is a part, and for each human being the most significant part, of

the sensational and ideal content. In its earliest form it consists only of that cluster of organic sensations which constitutes the perception of the body; but it comes in due course of time to include the past history of the individual, the contents of his memory, and the circle of his interests and aspirations. Though the massive complex thus formed dominates our entire mental life, it consists, when reduced to its elements, of nothing but sensations and mental images bound together by the ties of association. It therefore opposes no obstacle to the universal validity of the theory of parallelism.

Instead of commenting upon Dr. Münsterberg's theory of will, I shall present a summary of the objections urged against it by Professor Wundt,[1] and offer in closing a single criticism upon these.

It is, in the first place, a mistake to classify the voluntary act as a reflex action. It is desirable for purely physiological reasons to limit the use of the word *reflex* to cases where the nerve-process passes from sensory to motor tracts without accompanying phenomena in consciousness. For only in reflexes proper is the connection between a given sense-impression and a given movement a uniform one. Where events in consciousness intervene, the final motor result becomes incalculable. Of course it is inadmissible, however, to assume that in the latter case the physical chain is anywhere interrupted.

The outcome of Dr. Münsterberg's investigation of the will is already contained in the proposition from which he sets out, that the ultimate constituents of consciousness are sensations. This applies in reality only to the cognitive part of consciousness, not to the feelings and the will.

Dr. Münsterberg lays down the rule that, wherever in thought we have the feeling of our own activity, the idea *a*, which forms the subsequent state of mind, is implicitly contained in the antecedent state; as where I try to remember a name, think of the circumstances under which I heard it, *etc.* But his example does not agree with his rule; for what is present in the antecedent state is not *a*, but certain other ideas which stand in more or less definite relations to *a*. But upon just such relations as these the association of ideas depends, and it is the ordinary process of association which Dr. Münsterberg is describing. He has failed to point out, as he should have done, the difference between ordinary associations and those with which we connect the idea of our own activity.

In external voluntary action the idea of a movement does as a rule precede its actual execution. Yet even here the theory is inadequate, and overlooks the essential thing in volition. For the facts are not

[1] Philosophische Studien, VI, 3 (1890): Zur Lehre von den Gemüthsbewegungen.

completely described when the idea of a movement is said to be succeeded in consciousness by the perception of the actual movement. In passing from one to the other we have the feeling of our own activity, which is as much an empirical fact as is a sensation or an idea. Dr. Münsterberg's theory is obliged either to treat this feeling as an illusion, or to identify it with the muscular sensations. But as exactly similar muscular sensations may arise without our having the feeling of our own activity, as for instance when the motor nerves are stimulated electrically, it is evident that certain concomitant phenomena are here taken for the will itself.

The intellectualist theory, seeking as it does to resolve all mental phenomena into sensations and ideas, has its source in that tendency to substantialize mental events which looks upon the soul as a mere "bundle of presentations," for us objects of passive contemplation. Our volitions must, on this theory, be presentations, and as such decomposable into sensations; and elements of will which are non-presentable must of necessity be non-existent. But this whole theory is one tissue of false assumptions. Consciousness is in no sense such a bundle of juxtaposed presentations. Presentations are not objects, but events, which come into and pass out of existence, and during their brief life undergo continual changes. The percipient subject, above all, is not an observer, standing opposite its own presentations and passively contemplating them, but an inseparable segment of the network of psychic events themselves.

The objects of psychology are, in short, one and all conscious processes or events. These we separate into two groups, those which represent the objects and events of the external world, namely, our presentations, and those which express our own attitude towards the latter. The second group of processes divides into two subordinate groups, some being felt to be mere passive experiences, namely, our feelings, others to be self-produced, namely, our acts of will. The will itself is nothing different from these self-produced processes. But what is meant by the word *self-produced?*

When we seek to explain an act of choice, and to say why this was chosen and not that, we find that the mental states which were actually present do not suffice for this purpose. The reason why a particular impulse determines an act never lies in the relative strength of the conflicting impulses alone, but also in that upon which their relative strength ultimately depends; namely, the total character of consciousness as determined by its past history. This finds expression in the resultant quality of that product of innumerable past experiences which we call the consciousness of self. As in the progress of evolution the latter comes to be more and more clearly recognized as the decisive factor in

voluntary action, we have in our volitions the peculiar consciousness of choice; the act no longer appears the passive outcome of a conflict of impulses, but an active decision between them. As in volition, so in attention what gives the decision is not the group of ideas actually present, but a latent factor which manifests itself in the consciousness of self. The uniformity and constancy with which this factor functions have led to the inclusion of both processes under the higher concept of apperception. Apperception is simply a name for these processes, not a real entity; it has no existence apart from the changes it produces in the conscious content and from the phenomena of feeling that attend it. And the Ego which is the decisive factor is not an abstract idea, but merely the totality of our native powers and past experiences coming to consciousness as a single feeling.

Exclusive consideration of the conflicting impulses or of the self lead respectively to the vulgar determinism and to indeterminism. The former regards every choice as the necessary issue of the conflict of impulses; but it cannot explain the consciousness of freedom, which depends upon the ascription of an act to the self as the bearer of all permanent volitional tendencies. The latter conceives choice as made by the self independently of motives; but while it explains the consciousness of freedom, it cannot explain either the origin of this consciousness or the influence exerted by the motives upon our acts of will.

Professor Wundt's view of the will, as expressed above, may be briefly summarized in the following sentence: We have, besides presentations and feelings, states of consciousness which we feel to be self-produced; and the self that produces these states is a sort of net-product of our native powers and past experiences. If, to clear up any obscurity that still lingers about the conception of the self, we turn to Professor Wundt's *Physiologische Psychologie* and *Ethik*, we read that "the consciousness of self, which has its root in the uniform activity of apperception, at last becomes narrowed down to this alone, so that at the completion of conscious development the will appears as the essential and, taken with the feelings and endeavors that proceed from it, the sole content of self-consciousness, from which the presentations are distinguished as relatively external constituents pointing to a world distinct from the personality";[1] and again, that "in the last stage of development the individual recognizes his essential being in the pure process of apperception; that is, in that inner activity of will which stands opposed to the remaining content of consciousness."[2]

The above explanations have at least the appearance of moving in a

[1] Physiologische Psychologie, 3d ed., II, p. 467. [2] Ethik, p. 385.

vicious circle. For on the one hand the factor which determines the activity of apperception is said to be the self, on the other hand the self is represented as ultimately identical with the apperceptive activity. This ambiguity is no doubt partly to blame for the disfavor in which Professor Wundt's theory of apperception is so widely held. It can be avoided only on the assumption that the self which decides and chooses consists of presentational elements (or the fused residues of such) bound together by ties resembling those of ordinary association. While of course these elements do not for the most part come to clear consciousness in our acts of choice, their influence is not on that account the less decisive.

It is important, however, to recognize that the essential feature of the complex thus constituted, — the feature, that is to say, which most nearly represents the essence of the self, — is not so much the presentational elements themselves as the manner in which they are associatively connected. For the presentational elements alone would afford no sufficient explanation of the character of individual acts of choice. Even in the simplest spinal reflex, the afferrent impressions afford no explanation of the movements they elicit, but the latter are correlated to the former in a manner which, while biologically highly purposive, is in itself entirely arbitrary. The associative connections between sensory and motor presentations in the cortex allow, within physiological limits, of an infinitely wider range of individual variation. It is these associative connections, depending as they largely do upon the emotional coloring with which the presentations invest themselves for the individual consciousness, and not the latter in themselves alone, which determine the elective affinities exhibited by the self in the presence of conflicting ideas or motives.

Professor Wundt is therefore perfectly right in maintaining that the decisive factor in volition is not to be found among the presentational elements of consciousness. And if we could wish any further admission from him, we have it already in his remark that the apperceptive connections of ideas must be assumed to have been developed out of associative connections.[1]

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NEW YORK.

[1] Physiologische Psychologie, 3d ed., II, p. 388.

REVIEWS OF BOOKS.

An Introduction to Ethics. By J. CLARK MURRAY, LL.D., F.R.S.C., Professor of Philosophy, McGill College, Montreal. Boston, De Wolf, Fiske & Co., 1891. — pp. vii, 407.

This volume will make as admirable a text-book for beginners in Ethics as the author's *Handbook of Psychology* has already approved itself for beginners in Psychology. Professor Murray has the rare capacity for writing good elementary text-books. He knows thoroughly the subjects on which he writes; he is luminous and orderly in his expositions; his style is attractive, and at times it almost glows with literary feeling; and his sense of proportion is so faultless that as a rule he says just what beginners ought to know and leaves unsaid what would only confuse them. It is a high compliment to the earlier manual that students have been known to re-read it for holiday entertainment solely; and the present volume seems to maintain the same high level.

The work is composed of two books. The first book (pp. 9–138), after a glimpse at Man Natural, discusses Man Moral, treating the Moral Consciousness, in three chapters, as Cognition, as Emotion, and as Volition. The second book (pp. 139–407), which is devoted to Ethics Proper, — for the first book gives the Psychological Basis of Ethics, — falls into three parts. The first part (pp. 141–240) examines the Supreme Laws of Duty, under the heads of Epicurean and Stoical Theories, especial attention being given to the Utilitarianism of Mill, though the author himself accepts the Kantian principle, of which a short account is given. The second part (pp. 241–346) is devoted to a classification and description of moral obligations. These are (1) the personal duties of bodily, intellectual, and moral culture, and (2) the social duties of Justice and Benevolence (the latter is very briefly discussed). The third part (pp. 347–407) treats of Virtue, — as an intellectual, an emotional, and a volitional habit.

In the first book the two chapters on the Cognitive and the Volitional Moral Consciousness are of the greatest interest. The former leaves nothing to be desired, either in matter or manner. It is a history of the growth of moral cognition, an analysis and speculative interpretation of it, and a criticism of the empirical theory to which

Professor Murray opposes the transcendental. It is all so well done that one would not suppose there was so much to do until one tried it. The quintessence of a copious literature (intuitional, utilitarian, and transcendental), it is not merely the quintessence, but also the author's independent elaboration and estimation of the material. On the other hand, the chapter on Volition seems less satisfactory. The author is a libertarian. He may be correct in saying that what alone renders the action of will on the material world intelligible is "the independence of self on the universe of not-selves" (p. 133). But I submit that more might have been made of the ethical and of the psychological arguments, and that beginners would have found them more satisfactory. Indeed, it is rather surprising, since Professor Murray insists that the ego is a centre of intelligent activity, that no reference is made to Wundt's discovery of the shortening of reaction-time by attention. Furthermore, it might have been considered, whether the liberty vindicated by Professor Murray's argument (which is essentially that of Green, as indeed he indicates) is a liberty that enables the agent to do otherwise than he does; for it is no less than this that our moral experiences crave, and anything short of it is, from the ethical point of view, sheer determinism. Lastly, the necessitarian argument is stated without its strongest modern re-enforcement, namely, the law of the conservation of energy and the consequent indispensableness (as it would seem) of interpreting all our movements (and therefore voluntary movements) in accordance with mechanical principles.

The discussion of Utilitarianism in Book II is introduced with some clarifying paragraphs on the psychology of pleasure. The arguments against the theory are clearly and concisely put, being obviously the product of large reading and independent reflection. Felicitous use is made of the concessions of Mill in his *Utilitarianism*, though no mention is made of the passage which really carries Mill over into the camp of his opponents; namely, the admission of a native sense of dignity which obliges us to reject lower pleasures for higher. It is unfortunate that other theories of duty are treated so much less fully than the Utilitarian. The little that is said of the Kantian doctrine is so good that one wishes there had been more; and, as this is the author's own standpoint, more might reasonably have been expected. I cannot but think it a mistake that the mechanico-evolutionary theory of duty, which has been the reigning theory in the sphere dominated by English thought, has not received more explicit consideration. Students would have been helped by learning what "natural selection" could and could not do for Ethics; and how its function could be interpreted in an idealistic theory of morality.

In treating of Duties and Virtue, to which the rest of the volume is

devoted, Professor Murray is at his best. He not only defines, analyzes, and classifies moral concepts, but he shows their concrete application to the principal spheres of human obligation, and sketches, in brief but telling outlines, the history of their development. At the same time he never loses sight of the truth that moral obligation points rather to a general spirit of life than to specific acts. The tone of the book, which is everywhere intellectually stimulating, is in this part morally bracing as well. Altogether, Professor Murray has produced a text-book for beginners in Ethics, which is far ahead of any similar work we now possess.

J. G. S.

The Present Position of the Philosophical Sciences. An Inaugural Lecture. By ANDREW SETH, M.A., Professor of Logic and Metaphysics in the University of Edinburgh. Edinburgh and London, William Blackwood & Sons, 1891. — pp. 32.

This is the address with which Professor Andrew Seth entered upon the Edinburgh professorship vacated last summer by the retirement of Professor Campbell Fraser. Apart from reflections growing out of the occasion, it is substantially an account of the province and function of logic, psychology, and metaphysics; putting in a brief way the thoughts expressed more fully in his article in this number of the REVIEW. It closes with a plea for a teleological and anthropocentric philosophy. The spirit of the address is judicial, courageous, noble, and ennobling.

J. G. S.

The Universe and its Evolution. A New Theory on the Existence of the Universe, the Causation of its Energy, and its Order and Development. By S. J. SILBERSTEIN. New York, 1891. — pp. vi, 56.

This pamphlet is a brief extract translated from an Hebrew original of five volumes. The author has one thing in common with the classic speculative thinkers: he believes he has struck out a new, original, perfectly satisfactory, and epoch-making theory of the universe. Nor can one fail to discern behind the poor printing, and the bad English, in the midst of dubious criticisms and speculations of an ostensibly scientific character, flashes of genuine philosophic insight; but these fail to atone for the pre-scientific atmosphere and method of the work. It is the business of the metaphysician, on the basis of all existing knowledge, to conceive as a whole the world which the sciences interpret in parts. Though Mr. Silberstein thinks he is the first to attempt this task, he in reality comes no nearer to it than the beginners of spec-

ulation among the Greeks and Hebrews, of whose *naïf* theorizings the work often reminds one. Of his lengthy criticism of the first principles of physics, this is not the place to speak, though I will venture to say it seems to me beside the mark. What Mr. Silberstein does see clearly — and here he is at one with current philosophy — is the absurdity of speaking of a material universe unrelated to an Intelligence. He makes the world "an emanation of the absolute Intellect, an act of its thought." But so far as the present pamphlet goes, this conception remains unfruitful.

J. G. S.

Ethics for Young People. By C. C. EVERETT, Bussey Professor of Theology in Harvard University. Boston, Ginn & Co., 1891. — pp. iv, 185.

The number of books on Practical Ethics grows apace. In *Review* No. 1, Ex-President Seelye's *Duty* was noticed, and here we have a similar volume for young people by Professor Everett. Both are excellent manuals. Dr. Seelye frankly bases his morality on religion; Professor Everett's morality is purely human. What he appeals to in his youthful readers is not their love or fear of God, but their own self-respect and their contempt for what is coarse, selfish, and wrong. In reading his volume, one seems to move in the *æsthetic* atmosphere of Greek morals. "Grand," "noble," "self-respecting"; "mean," "disgusting," "loathsome": these and similar terms are the ultimate categories of his ethical thinking. Perhaps for this very reason, his book will be better liked by young persons, whom in any event it can scarcely fail to interest and to elevate. It is a fine example of strenuous thinking on high subjects, expressing itself in a style which is almost captivating. The language in general is simple; the arrangement is orderly; the illustrations are drawn fresh from life, mostly from youthful life; and the chapters (forty-six in number) are so short that the youngest reader would scarcely read less than one at a single sitting.

The work falls into four parts: (1) Morality in General (pp. 1–32); (2) Duties towards One's Self (pp. 33–83); (3) Duties to Others (pp. 84–105); (4) Helps and Hindrances (106–185).

While the book as a whole can be heartily recommended to both young and old as a healthful tonic for every-day life, there are certain chapters which deserve special commendation. Nothing could be happier than the author's account of the breaking up of the ethics of custom in the life of the youthful individual and nation, and his exposition and criticism of the Epicurean and Stoical principles, which the Greeks adopted as a substitute for customary morality. His account of Courage is thoroughly Aristotelian, and that of Fortitude at once

Stoical and Christian. The short chapter on Contentment might be pondered with profit by the majority of grown-up men and women. The treatment of Self-respect, which he regards as the foundation of all true manliness and womanliness, is discerning and stimulating. I have space only to signalize besides the two chapters on Selfishness and the Home. As a whole, the work answers in a way at once intelligible and interesting to the young persons for whom it was intended, and to others too, the deepest question that can be asked, "What is the true life for individuals?" It will be strange indeed if readers are not made both wiser and better. In another edition the following corrections should be made: iii, l. 2, "XXIII" for "XX" and l. 4, "XXIV" for "XX"; p. 1, l. 6, "other" for "these"; p. 4, l. 9, "Politics" for "Political Economy"; p. 126, l. 22, "of" for "fo."

J. G. S.

An Outline of Locke's Ethical Philosophy. Inaugural Dissertation presented to the University of Leipzig for the Degree of Doctor of Philosophy by MATTOON MUNROE CURTIS, M.A. Leipzig, Gustav Fock, 1890. — pp. viii, 145.

In a note to his "*Geschichte der Ethik in der neueren Philosophie*," Professor Jodl remarks, "I am not acquainted with any monograph upon the ethics of Locke." The present dissertation thus fills a niche hitherto unoccupied in the history of English ethics. The author begins with an historical sketch in which he points out that the "sensualism, materialism, and absolutism" of Hobbes "formed the point of departure of modern ethical speculation" (p. 8), and dwells interestingly on a neglected contemporary of Hobbes and forerunner of Cumberland, Nathaniel Culverwel.

After this introduction Professor Curtis comes to Locke and finds his position determined in great measure by reference to his great predecessor. "It remained for Locke to review the entire philosophy of Hobbes and assail it in each of its ethico-political strongholds. . . . They represent two distinct and opposing lines of thought not only in politics, but in morality and religion" (p. 18). "On the main lines Locke opposes Hobbes throughout, while agreements in particulars are the agreements of both with others who went before" (p. 22). This interpretation differs widely from those of Professor Jodl, "Locke agrees with Hobbes in his fundamental idea" (*Grundanschauung*) (*G. d. Ethik*, I, p. 146), and Professor Wundt, "Locke follows Hobbes in his fundamental ideas in that he opposes intellectualism" (*Ethik*, p. 275) as well as of Professor Paulsen, whose opinion the author cites and attempts to refute. Locke like Kant seems to have given rise to two lines of successors, each claiming to be the legitimate heirs of his intellectual

estate. The line through Hume and Voltaire to the French Encyclopædists naturally finds in him a link binding them back to Hobbes; while the line through the Scottish school as naturally finds in him a bitter opponent of materialism and its founder in England. Numerous passages may be cited in support of either position. It is to the latter class that Professor Curtis belongs. In agreement with this tendency he supplements the two generally recognized sources of ideas, sensation and reflection, by a third, the intellect, and argues ably in support of this interpretation of the "Essay." The most definite quotation by which he seeks to uphold it is found in Locke's First Letter to Stillingfleet, "General ideas (*e.g.* of substance) come not into the mind by sensation or reflection, but are the creatures or inventions of the understanding, as I think I have shown" (p. 35). It might have been better, had the author put over against the foregoing some one or more of the seemingly contradictory passages in the second book, *e.g.* "The understanding seems to me not to have the least glimmering of any ideas which it doth not receive from one of these two," *i.e.* sensation and reflection (*Essay on Hum. Und.* II, i, 5), and either attempted to reconcile them, or admitted that the contradiction was irreconcilable. We may admit the position taken by President Porter in a passage quoted (p. 37), "In the latter part of the *Essay* . . . without asserting in form any new source of ideas, and without in the least abandoning his previous teachings . . . he does in fact take the same ground with Reid and the Scottish school," but this does not justify the construction of Locke's ethical system without a careful balancing of conflicting passages. The author may have done so in his own study, but we should be glad to know more fully than he has enabled us to do his reasons for accepting one set and passing somewhat lightly over what makes against his interpretation. In no part of his monograph does he admit the existence of fundamental difficulties or contradictions in Locke's thought. Yet the conviction with which one leaves this interesting study may well be that such difficulties exist, and that no harmonious system of ethics can be constructed from his writings without doing violence to some parts of them. Is it not a possible and even a probable position that Locke embodied and expressed, perhaps unconsciously and at different periods of his twenty-five years of writing on these subjects, the opposing views which gradually came to more precise expression and a clearer consciousness in his successors? This possibility the author does not examine or suggest. On the whole, however, the thesis is an interesting and suggestive attempt to interpret in a systematic way all of Locke's writings on ethics including the "*Treatises on Government*" and the "*Reasonableness of Christianity.*"

W. F. Willcox.

Spinoza's Erkenntnisslehre in ihrer Beziehung zur modernen Naturwissenschaft und Philosophie. Allgemein Verständlich dargestellt. Von Dr. MARTIN BERENDT und Dr. med. JULIUS FRIEDLÄNDER. Berlin, Mayer & Müller, 1891. — pp. xix, 315.

Although quite an extensive literature has grown up around Spinoza, comparatively little attention has, hitherto, been devoted to his theory of knowledge. The authors of this book have gone into the subject with characteristic German thoroughness, and the results of their investigation are both novel and suggestive. It is one of the most current conceptions, say they, that Spinoza deals in *a priori* constructions, and deduces his philosophy from definitions which are not taken from experience. They profess to show that, on the contrary, he is the philosopher of experience (*Auschauungsphilosoph*) *par excellence*, and that the current conception is due entirely to his method of presentation (p. ix).

Not less striking than their interpretation is their claim that Spinoza is the philosopher of all time κατ' ἐξοχήν, and that his system furnishes the key to the true understanding of the world. The philosophy which they apply to the problems of our time seems to be that of Schopenhauer, rather than that of Spinoza as usually understood. They maintain, however, that the former reproduced the real thoughts of Spinoza, and confess that it has been mainly through a study of his system that they have reached their present position (pp. xi, 270). In the first two hundred pages of the book, the authors explain in a popular way Spinoza's theory of knowledge, and show its wonderful correspondence with the results of modern natural science. The remaining portion is more technical and polemical, and takes account of the existing literature of the subject. The lack of a table of contents is a serious inconvenience in using the book. The proof reading, too, has been very careless, nearly every page being disfigured by typographical errors.

In a scholium to ii, 40 of the *Ethics*, Spinoza distinguishes three ways in which our knowledge arises. The first kind of knowledge comes through *imagination* or *opinion*, and is either the result of unordered experience (*vaga experientia*), or of attaching certain meanings to words or symbols which we have heard. Knowledge of the second kind Spinoza names *reason*, and the third *intuition*. He has explained very clearly what he means by knowledge of the first kind. "When the mind regards external bodies through the ideas of the modifications of its own bodies we say that it imagines" (ii, xvii, note). This must also be extended to the knowledge the mind has of itself, for we find that when we perceive things "after the common order of nature," the mind has no adequate knowledge of itself, of its own body, or of external

bodies. The authors draw more fully the logical consequences of this doctrine and show how completely it is in harmony with the present scientific standpoint.

It is difficult, however, to agree with the authors' assertion that by *ratio* Spinoza understands knowledge of the natural sciences. He describes this knowledge as, "arising from the fact that we have notions common to all men, and adequate ideas of the properties of things." The authors appear to me to prove conclusively that Spinoza meant by these *notiones communes*, "the axioms of mathematics and the fundamental conceptions of the sciences" (p. 46). It is not so clear that the method of which Spinoza thought is "that of experiment and exact investigation of things." The example which he himself gives of rational knowledge, of deducing the rule for finding the fourth proportional from a knowledge of the theory, shows clearly that he was not thinking of induction. The passage upon which the authors base their interpretation is the note to ii, 29 of the *Ethics*. The mind, says Spinoza, has no adequate knowledge when it is determined from without, by the chance play of circumstances to regard this or that; but it has a clear and distinct knowledge when it is determined from within, *i.e. by the fact of regarding several things at once to understand their points of agreement, difference, and contrast.* The authors assert that this is exactly the method of the natural science which by observation and experiment strive to discover the resemblances and differences of bodies.

It does not seem to me that any such inference is warranted by the passage. The contrast is between determination from without and determination from within, or, as the authors themselves put it, between receptivity and spontaneity. There is no doubt that Spinoza, in common with the other thinkers of his time, regarded mathematical knowledge as the type of rational knowledge. Numerous passages might be quoted, both from the *Ethics* and from his correspondence, to show that he conceived it to be the task of reason to deduce from the "notions common to all men" the properties of things, in full confidence that "the order and connection of ideas is the same as the order and connection of things."

The artistic way of regarding things is, according to the authors, the method of the third kind of knowledge, which Spinoza names intuition. By means of this power, whether manifested in art, in the drama, or through scientific insight, the mind grasps at once the true character, the eternal essence, of things. Intuition is a knowledge, too, of the essence of *individual* things, while reason deals only with *universals* (V, xxxv, note). Wherein, then, does the essence of individual things consist? In Part III, vi–ix, Spinoza tells us that the essence of each thing

is its effort to self-preservation, and this effort may either be called will or appetite, according as it is referred solely to the mind, or to the mind and body at the same time. Thus Schopenhauer only repeats Spinoza's thought that the essence of things consists in the "will to live." Spinoza's philosophy, then, is not a mere system of intellectualism which, as has been so often asserted, identifies will and intellect, but it recognizes, as the fundamental essence of each thing, the active principle whereby it perseveres in existing.

But the essence of things must not be confounded with existence in a certain time and place. "Although every single thing is determined by another individual thing *to exist in a certain way*, nevertheless *the force by which it perseveres in existing* follows from the necessity of the divine nature" (II, 45). It is when things are seen as contained in God that their real essence is apprehended, and they are said to be known *sub æternitatis specie*. This conception of essence when applied to man denotes that permanent direction of will which is to be distinguished from single acts of will, and which corresponds to Kant's "intelligible character." The authors, like Kant, seem to imply something more by the conception than mere regularity of action. They assert that *besides the laws*, there must remain the eternal essence as a permanent element in all changes of phenomena (p. 151). The essence however must continually manifest itself or else it would be an *Unding* (p. 147). Thus we find the continual reappearance in different times and places of the same persons and states and even of inanimate things. The essence of Achilles reappears many times in history in Alexander, in Cromwell, and even in Prince Bismarck. Rome lives again in modern Prussia.

It appears to me that these surprising and fantastic results by no means follow from Spinoza's system. Granting that essences must always be manifested, we must remember that the essence of an individual thing is only a certain fixed mode which expresses the eternal essence of God. This eternal essence expresses itself in an infinite variety of ways, and there is no reason to suppose that it continually repeats itself. It is through substantializing the individual essence, quite contrary to the spirit of Spinoza, through forgetting that this denotes only a certain mode of divine action, that the authors have been led to this strange speculation. One would like to inquire, too, what *a posteriori* considerations have determined the authors' views, and what is the metaphysical test of identity which they apply.

Whether or not we may agree with the interpretation given by the authors of *Spinoza's Theory of Knowledge*, the book is extremely valuable and suggestive. They apply Spinoza's philosophy (which is also their own) to many of the problems of our time, and if they do

not succeed in finding any new solutions, the old truths are nevertheless put with a new emphasis. Philosophical students will await with interest the appearance of their promised expositions of the metaphysical and ethical systems of Spinoza.

J. E. CREIGHTON.

The Philosophy of Locke in extracts from the Essay concerning Human Understanding. Arranged with introductory notes by JOHN E. RUSSELL, A.M., Mark Hopkins Professor of Philosophy in Williams College. [*Series of Modern Philosophers.* Edited by E. HERSHEY SNEATH, Ph.D.] New York, Henry Holt & Co., 1891. — pp. iv, 160.

This is the initial volume of a Series of Modern Philosophers to be published under the editorial supervision of Dr. E. Hershey Sneath. The plan of the series, as described by the editor in his prospectus, is to present "the substance of the representative systems of modern philosophy in selections from the original works." Each volume is also to contain a biographical sketch of the author; a brief exposition of the system with a statement of its historical relations; and a bibliography. Seven volumes (dealing with Descartes, Spinoza, Locke, Berkeley, Hume, Reid, Kant, and Hegel) have already been undertaken by such well-known scholars as Ex-President Porter, Professor Fullerton, Professor Royce, and others. The publishers have also purchased Professor Watson's favorably known work, *Extracts from the Philosophy of Kant*, and have incorporated it in the series. Other volumes may follow, and the editor, with commendable enterprise, is also projecting a similar series of English ethical writers.

The primary object of this series is to promote the study of the history of philosophy by making it more easily possible to bring students into direct communication with the original works, and allowing them to become acquainted with the authors at first hand. Another class of readers, whose wants the editor has in view, is the large number of professional men, particularly clergymen, who desire to extend their knowledge of philosophy, but whose time for such reading is necessarily limited.

It is doubtful if any greater service could be rendered to philosophy than to place before the public, in a convenient and attractive form, the classical presentations of its greatest masters. Every one interested in the advancement of philosophical knowledge in this country will admit the importance of making the works of the great thinkers more accessible to students and to the public generally. These writings have not been treated as they deserve. They have not, by any means, received

the same attention as standard works, both ancient and modern, of a more strictly literary character. This series, in so far as it renders philosophical works more easily accessible, is a step in the right direction, and will doubtless prove useful.

Yet I must confess to a prejudice — which I doubt not is shared in by many — against presenting a system of philosophy by means of excerpts. To substitute such abridgments would be to put the part in place of the whole, and it would be extremely unfortunate if they ever should supersede in any degree, the use of the complete text. They are, and must necessarily be, interpretations, inasmuch as the author selects the passages which *seem to him* to best represent the main line of thought. All the arguments which can be urged as to the superiority of a first hand acquaintance with a system, over any knowledge gained through histories of philosophy, will lead us to prefer the complete text to an abridgment. Of course, it is impossible for the average student in a course on the History of Philosophy to read any large portion of the original. Many teachers will prefer, however, that he have the unabridged text in his hands, and read certain chapters or portions which they may direct. From turning over the complete work and reading a chapter here and there, he gains, in my opinion, a more exact knowledge of its spirit, and a juster conception of its proportions than he could from a number of selected passages.

The series would find a larger circle of readers if it could have been published at a much lower rate, even if the present plan had to be modified. For example, the complete text of Locke's *Essay* can be obtained for little more than ($1.25) the price of the abridgment.

The volume before us appears to me, in the main, an excellent piece of workmanship. The introduction contains an interesting account of the principal events of Locke's life and the general tendency of his philosophy. The classified list of his writings, and a short bibliography increase the value of the book. The selections are generally representative and have been made with excellent judgment. The author as a rule quotes the whole of a paragraph, and thus avoids giving any impression of abruptness. He has also contrived very skilfully to preserve the continuity between the paragraphs and thus to render the book quite readable.

I cannot help thinking that the first book of the *Essay* has suffered more from abridgment than any of the others. The formal and somewhat artificial arguments against innate ideas which Professor Russell presents to us in the two and a half pages he devotes to this book, represent very inadequately Locke's splendid protest against dogmatism and formalism. That book was, as Professor Campbell Fraser says, "expressly put by Locke as a protest against the tyranny of traditional

assumptions and empty words." It was a declaration that men must hereafter think and know for themselves, and that no knowledge is exempt from examination and criticism. The force of this protest is very much weakened, if not entirely lost, in the abridgment.

The opening chapters of the second book, and those parts which deal with Time, Space, and Infinity, with Substance and Cause, are well represented. The most noticeable omission in this book is the long chapter on Power, but no doubt it will receive due attention in the forthcoming volume, which is to deal with Locke's ethical theory. The most important passages of the third book are very skilfully brought together in a brief space. More prominence has been very rightly given to the fourth book, and its more important chapters are well represented. With the exception of the first book, the proportions of the *Essay* appear to be well preserved.

J. E. CREIGHTON.

Schiller als Philosoph. Von KUNO FISCHER. In zwei Büchern. Erstes Buch: Die Jugendzeit, 1779–1789. Heidelberg, 1891. — pp. 1–172.

As far as the title is concerned, this is the second edition of a book which appeared many years ago. Its contents are, however, altogether new. The former work confined itself to the consideration of Schiller's Kantian period, while the present volume studies his earlier philosophical productions, and is, therefore, Part I of a work embracing both epochs.

In his usual clear and masterly manner Fischer traces Schiller's philosophical development, the knowledge of which he deems essential to a proper understanding and appreciation of the poet's compositions. Works like *Die philosophischen Briefe, Der Geisterseher, Die Künstler,* must remain obscure to the reader unacquainted with their evolution. A thinker is a part of his country and time, and consequently related to the prevailing course of thought. The beginning of the latter half of the eighteenth century found Germany under the sway of a "common-sense" philosophy that was the final outcome of Wolff's eclecticism, and bore a great resemblance to the Scottish school of Reid, with which indeed it came into direct contact. We find adherents of Wolff, like Garve, translating the books of Scottish moralists into German, books which Schiller studied in the Karlsschule. Schiller's earlier writings, *Die Philosophie der Physiologie* and *Ueber den Zusammenhang der thierischen Natur des Menschen mit seiner geistigen,* betray the influences of the reigning systems of thought. But the "poet" crops out in all these productions; poetical speculations are introduced that have no immediate bearing on the scientific investigations under discussion. Thus, the universe is conceived as a divine work of art, which it is the highest end of man to contemplate and understand. Every physical phenome-

non is the expression of a divine thought. Fischer's keen analysis shows how, in spite of occasional tendencies to materialism, scepticism, and pessimism, this æsthetical ideal prevails in Schiller's compositions, and ultimately triumphs in *Die Künstler*. With an examination of the latter poem the volume before us closes.

It is interesting to watch the struggle between the poetical fancy of the man and his materialistic doubts. *Die philosophischen Briefe*, in which this conflict rages, might be called a dialogue between idealism and materialism. "My heart," writes Julius, "was craving for a philosophy, and phantasy substituted its dreams. . . . A bold attack of materialism overthrows my creation." "What a miserable paradox of nature, — this free and aspiring spirit is chained to the sluggish, never-changing clock-work of a mortal body, yoked to its petty trials, ruled by its petty desires, this god is relegated to a world of worms." After Schiller had conquered these sceptical moods, he portrayed them in the character of the Prince in *Der Geisterseher*. "Show me a creature that endures," exclaims the latter, "and I'll be virtuous. Everything is subject to change; nothing constant except this mechanical process of causality. The universe is without purpose. All physical and mental occurrences are but links in an endless causal chain. Pleasures and pains set the human mechanism in motion; the desire for happiness, the fundamental impulse of man's nature, is satisfied by momentary pleasures. But human happiness is not the purpose of the universe. If the crystal could think, it would regard crystallization as the highest plan of the world, and the most perfect crystal would be its god. Let man enjoy! Why care for the past or future? I am the bearer of a sealed message. I know not what it contains, nor care I to know. All I ask is the pay for my errand."

The clearness and precision which characterize all of Fischer's writings also belong to the meritorious features of the present work, and contribute to his reputation of being a philosopher "whom one can understand." This excellence in his style, of combining precision with clearness, is due not only to lucid thinking, but to his power of detecting the essential traits of an author's thoughts, a quality which we may call the highest form of critical tact.

FRANK THILLY.

On Sameness and Identity. By GEORGE STUART FULLERTON. Publications of the University at Pennsylvania. Philosophical Series No. 1. April, 1890. Philadelphia, University Publishers. — pp. 153.

This is in spirit and execution an excellent piece of work; it is through work of this kind that a tenable epistemology — the chief desideratum in Philosophy just now — will be arrived at. The author is content

with the task of "clearing the ground a little." He aims at pointing out the differences in connotation of the highly ambiguous word "same," and showing the elements they have in common, and in tracing some of the difficulties and absurdities which have sprung from using the word loosely and without proper connotation. He keeps his aim so perfectly in view throughout his *brochure* that he has given students a model of investigative work. He apologizes for hair-splitting and for being uninteresting, but his subject is thorny. In the first half of his work the author thinks out for himself seven different senses of sameness; he deals first with sameness in things that he finds to be immediately known, and then with sameness which may obtain in a world or worlds beyond consciousness, finding that these seven senses of the word cover all actual and possible applications of it. The common notion that unites them is the idea of similarity. Identity is a kind of sameness, the sense of sameness where the consciousness of duality has fallen into the background. The fact that Professor Fullerton has given only two pages to the discussion of Identity shows that for one thing he regards the word "identity" as less subject to ambiguity than "sameness," and for another, that he has not desired to go into the epistemological relations of the two words. His merging identity into sameness [as a kind of sameness], and his reducing sameness to the conception of similarity, makes one wish that he had gone on to give us a theory of similarity. This is the line of course on which his work might be carried on; his distinction of sameness and identity would probably merge into the broader one of difference and similarity, which one would regard as expressing certain categories of the logical judgment. It is just this question of where sameness ultimately consists that comes up to the mind after following the writer's careful analyses of the kinds of sameness. I wonder if he really means to let identity lapse into sameness and so get only one notion; if he does, one would like to know where he places that notion, whether on the level of perception or of judgment; if he does not, — and I think the notions are parallel or antithetical, — he would find that he could not keep his question apart from the theory of Predication; it is only through considering the notions of sameness and identity in the light of the judgment that one can really say wherein they consist, *e.g.* whether they are things or categories.

If Professor Fullerton had tried to tell us more about the link between his kinds of sameness, his analysis — which it must have given him great trouble to think out — would have been more appreciable, and less difficult to summarize. One regrets in this connection the omission of Leibnitz from his historical excursus; not only is Leibnitz's thinking on the question of sameness excessively difficult, affording therefore scope for the application of Professor Fullerton's distinctions, but it is valuable

in so far as it brings to a focus the different points of view on the matter. Again, while one admires the way in which our author pursues his aim without entangling himself in theories of perception, whether subjective or realistic, showing the representatives of these theories along with the common-sensist and the sceptic how they are affected by his strictures about sameness, one would have wished him to indicate which way of regarding knowledge seems to him freest of difficulties, as tested by the categories he is dealing in. The examination of Dr. McCosh's Realism may be regarded as a step in this direction. I question if the booklet ought to have been called a psychological study — epistemology it certainly is: there is almost no psychology in it; for had there been, one would have had the psychological solution of sameness as relative identity of content in presentations brought forward. The subject, I repeat, makes the book a crabbed one, but there are many passages where the thought has both range and rhythm. Much of the historical matter of the second part of the book will be of great use to students; the careful understanding the author shows of the prolix and prosaic Locke, and his acute criticism of Spencer's logic seems to me among the salient features of the book. There is a great similarity in tone, and method, and scope between this study and Dr. Pikler's recent volume on objective existence; both books to my mind represent the best sense in which philosophers may go "back" previously to going steadily onwards.

W. CALDWELL.

Fundamental Problems. The Method of Philosophy as a Systematic Arrangement of Knowledge. By Dr. PAUL CARUS. Second Edition, Enlarged and Revised. Chicago, The Open Court Publishing Company, 1891. — pp. viii, 373.

This book consists of a series of sections, which set forth the principles of the Monistic Philosophy, as the author conceives of it. He devotes more than one hundred pages to answers to criticisms. It is very difficult to pronounce a judgment on the book; it is, in some respects, I suppose, a remarkable one. The characteristic of Dr. Carus's mind is its power of lucid condensation; and he gives us here, in readable and brilliant language, the main results of philosophy as "the systematic arrangement of knowledge." The student of philosophy would not inaptly characterize the author's point of view as a combination of Hegel and Spencer mediated through Comte. But my impression is, that the ordinary intelligent reader, who cannot be supposed to read between the lines, would, while admiring the eminent clearness of the book, feel in it a disappointing absence of a definite point of view. Unless it is very carefully shown how it is that the world is one, and can

be thought as one, Monism is apt to appear as somewhat otiose philosophy (*πάντα καλά λίαν*), and, as the outcome of philosophizing, hardly a pronounced step beyond the expression of the postulate with which all philosophy begins — that the world must be one. Nor, in this very regard, do I think does Dr. Carus help us much. His chapters show us how many so-called oppositions or dualisms are reconcilable with each other, but there is no evident connection between his chapters, which thus become a series of sketches [and there is an artistic play of light about them] rather than the logical development of a theory of knowledge and reality. It is easy to see how ideas and ideals and facts, how reason and sense, causation and free will, hedonism and asceticism, can all, and in fact all do, exist in the same world; how in fact the universe is God, and God is the universe; but what we want to say of a completed philosophy is one of two things, or perhaps both of them: either to know what aspect of reality is for us the highest aspect of reality, or to know what are the different points of view that the mind must take about the world, and how they can be logically connected. While the author has done wisely, it seems to me, in discarding the subjectivistic conclusions of the critical philosophy, I think he sinks too much the idea of criticism into that of realism, which latter idea too he carries out at the expense of what one might call a legitimate nominalism. The ethical outcome of Monism would, I fear, be indifferentism; what would save the system from that would be a tenable theory of individuality and of teleology. I do not mean to imply that a metaphysic should play into the hands of an ethic, but rather that the ethical facts should become at least part of the data of a philosophy. On the whole, the side of ethical showing that interests Dr. Carus is what is expressed in the *Schliesse dich an ein Ganzes* of Goethe, rather than in the *In suo esse conservari* of Spinoza or, for that part, of the evolutionist. His book, though, deserves study at the hands of all who have an interest in the development of philosophy.

W. CALDWELL.

A Study of Greek Philosophy. By ELLEN M. MITCHELL. With an Introduction by WILLIAM ROUNESVILLE ALGER. Chicago, S. C. Griggs & Co., 1891. — pp. xxviii, 282.

The ten pages of platitudes, which serve as introduction to this so-called "*Study*" *of Greek Philosophy*, awaken in the reader at the outset an unfavorable prognostication of the book. In the further reading of the volume this unfavorable impression receives some modification; though with a half-dozen reasonably good handbooks already on the market, it is not easy to find a justification for the appearance of this

one. The volume presents nothing new in matter or original in treatment; it is further marred by many inaccuracies, which render it unserviceable for pedagogical purposes; and scholars familiar with the theme handled (though these are evidently not the persons for whom the book was intended) will find it smacks strongly of dilettantism. The character of the illustration on the front cover will help much to confirm this. Why permit a book-cover to be used for the conveyance of such distorted notions as those conveyed by this illustration?

As for the contents of the book in general, there is nothing to justify the use of "study," as it appears to me, rather than the more ordinary title "history." The material, I should say, was obtained chiefly, if not exclusively, at second hand. Good use is made of both those Nestors in the investigation of Greek philosophy, Hegel and Zeller, but more particularly of the former (wherein one readily sees the influence of Dr. Harris). Two or three excellent translations of fragments of *Parmenides* are found on page 22. In the matter of classification the author follows in the main the divisions of Zeller, though she prefers the pre-sophistic division of Überweg-Heinze to the pre-Sokratic one of the former historian. Inasmuch as we have both in English and German an abundance of passably good histories of this period of philosophy, and the materials have been in the main already critically sifted, there is no likelihood of a writer nowadays making very glaring mistakes in the compilation of a handbook. But under these circumstances, in order for a book to be good, it must be very good; it must be lucid in interpretation, vigorous in style, and, if intended for a text-book, it must in manner of presentation and arrangement satisfy a high pedagogical standard. None of these conditions is satisfactorily met. Further than this, there are certain particular defects, some of which I shall proceed to point out. I am the less loath to do this because the history of philosophy is not the field, as it seems to me, for exercising the gift of authorship after the fashion of dilettanti.

When the author says (p. 20) that Xenophanes wrote in verse like all the older philosophers, she had evidently forgotten Herakleitos. This applies equally to her calling Zeno the first philosophical prose writer (p. 24). On page 32, Empedokles' doctrine of the four elements is said to be referred to under the names of Zeus, Here, and Nestis. How can this be without the addition of Ἀϊδωνεύς or γῆ? A curious oversight is found in the statement (p. 37) that the differences in the atoms of Demokritos are exclusively quantitative, yet this is followed immediately by a quotation from Aristotle which assures us that these differences were also differences of form. What is meant (p. 38) by knowledge as an "investigation of principles" will probably remain the exclusive secret of the author. In the light of existing evidence, to set

the date of Protagoras 490 B.C. (p. 55) is not defensible. When the author speaks of *poisoned* hemlock (p. 72), one wonders what species of innocuous plant she had in mind. On page 78 the author finds the elements in the philosophies of Sokrates and Plato, as set forth in the dialogues of the latter, easily discernible; one is glad to find this obscure matter suddenly becoming clear, but has some misgivings when, a few pages further on (p. 90), the author says, "Whether this sentiment is Plato's own, or that of the historical Sokrates, is undetermined." In characterizing the philosophy of Aristippos the author says correctly enough that "pleasure is a sensation of gentle motion; pain, of violent motion;" but she says further, and not so correctly, "the *mean* between the two is indifference" (p. 99). Is, then, *calm*, which Aristippos associates with indifference, a mean between gentle and violent motion? On what evidence are we to suppose that the academy was not a gymnasium, as one would conclude from page 110? The chapter on the Dialectic of Plato is reprinted, with slight verbal alterations, from the *Journal of Speculative Philosophy*, Vol. XXII, and is the best chapter of the book. But why the emendation of *geometry*, as in the article to *geography* (p. 123), in the book before us? To say that self-control or temperance (p. 150) is the virtue of sensuous appetite (ἐπιθυμητικόν) is not accurate (cf. Plato, *Rep.*, 430 *E*, 431 *E*; also Überweg-Heinze, *Geschichte d. Phil. d. Alterthums*, 7te Aufl. p. 175). The statement on page 223 about the little work of Aristotle on Poetry would not lead the reader to suppose that the "little work" is only a little fragment; and when the famous definition of tragedy in this fragment is mentioned by the author, she quotes it all awry. Did any one before her ever suppose that Aristotle meant a purification of the emotions *of* fear and pity (p. 224), and not *through* (διά) pity and fear? This, however, is not more inaccurately stated than Xenophon's (*Mem.* iv. 8. 11) characterization of Sokrates on page 65. Instead of *new* academy (p. 254), the author evidently means to say *middle* academy. These are a few of the defects, from which one can readily conclude that the volume is ill-fitted for a handbook of reference. The book is further disfigured by a great many careless mistakes, such as, νοὺς (pp. 37, 39), δοχα (p. 127), Ilyssus (p. 110), Amyutas (p. 161), Boetia (p. 42), diancetic (p. 213), homoumeria (p. 42).

WM. A. HAMMOND.

Leibnizens Streit gegen Locke in Ansehung der angeborenen Ideen. Inaugural-Dissertation zur Erlangung der philosophischen Doctorwürde an der Ruprecht-Karls-Universität zu Heidelberg. Vorgelegt von FRANK THILLY. Heidelberg, 1891. — pp. 47.

The real subject of this dissertation is broader than that indicated by the title. It may be described as an investigation of one of the main points at issue between Rationalists and Empiricists, the two schools which divide modern philosophy. The author has kept well before him the object of the work, which is historical rather than critical. The treatment is systematic and thorough, and he displays throughout an intimate acquaintance with the works of the authors under consideration. The manner of presentation, too, is delightfully clear and vigorous, and one feels that the author has in a large measure caught the spirit of his teacher, Kuno Fischer.

The first two chapters are occupied with discussions of Locke's relations to Bacon, and to Descartes. Under the first heading the author finds that Locke was greatly influenced by Bacon. His assertion that all knowledge must begin with experience is taken almost verbatim from the latter. Dr. Thilly also discovers a parallel between Bacon's demand that the mind be cleared of idola, and Locke's polemic against innate ideas. On the other hand, Locke's relation to Descartes is a purely negative one, and it is mainly against him that the arguments of the first book of the essay are directed. The author contends (p. 23) that Locke did not misunderstand Descartes as has been so often asserted, but the view of innate ideas which he so vigorously assails was just that maintained by the latter.

Locke's arguments and Leibniz's reply are very neatly summarized in a number of parallel propositions (p. 45). The latter urges against Locke that the mind is not a mere *tabula rasa*, but has before all experience certain predispositions. These first become explicit on the occasion of sense excitation, but they are the contribution not of sense, but of the understanding.

J. E. CREIGHTON.

Ethica, or the Ethics of Reason. By SCOTUS NOVANTICUS. Second edition, revised and extended. London and Edinburgh, Williams and Norgate, 1891. — pp. vii, 356.

This work, published anonymously in 1885, like its predecessor, the *Metaphysica Nova et Vetusta*, at once attracted, in an unusual degree, the attention of the philosophical world, and won for its author, who has since acknowledged his identity as Professor Laurie of Edinburgh, a leading place among living philosophical thinkers. The *Ethica* now

follows the *Metaphysica* into a second edition, and advantage has been taken of the opportunity thus afforded to "elaborate the argument more fully, and correlate it more frequently" with the earlier work. The book, as now reissued, contains several new chapters, dealing especially with the altruistic virtues and with the idea and functions of the State. The general argument has gained perceptibly in value and impressiveness through the present revision; and while the book has been enlarged, the statement is even more succinct than in the original edition. So condensed is the argument, and so severely scientific is the entire treatment, that the work is, now as formerly, suited rather to the capacity of experts than of the "general reader," or even of the college student. Yet the style is, for the purpose, often strikingly effective; one feels that such earnest and rigorous thinking is appropriately clothed in such language. And to those who can read between the lines of the scientific exposition, the work breathes an ethical fervor which is none the less impressive because it is carefully restrained. The practical interest which, according to Aristotle, an ethical treatise ought to possess, is not absent; the book abounds in acute moral judgments, and gives evidence of an ethical temper which is at once genial and severe.

The author's main thesis is the parallelism of knowledge and morality. He finds "will-reason" at the heart of both. "The end of man, as of every other organism, is self-realization" (p. 37). This is possible only through the fulfilment of the idea or law of man's nature. The peculiarity, in man's case, is that we have "realization of self *by self*"; man has to "organize himself," or reduce himself to law. For in man there is a dual nature — the "attuent" and the "rational," — the man of feeling or impulse, and the man of reason or will. The former is the "real" or "nature," the "subject" or "individual"; the latter is the "formal," the "personality," or "ego," constituted by the subsuming of the attuent subject or individual. The function of the rational ego, in relation to "sensibility," is essentially the same as its function in relation to "sense"; in both cases the "attuent" has to be "intuited." "All incitements of feeling are arrested just as, in the cognition of the external, the presentations of sense are arrested; and they are co-ordinated towards ends" (p. 51). "Self-realization, then, is possible only through the constant presence of the formal (the idea) in the real, of will in feeling, and its perpetual supremacy in that domain" (p. 37). Accordingly, "perhaps the best expression for the chief good . . . is *Fulness of Life achieved through Law by the Action of Will as Reason on Sensibility*" (p. 287). On the other hand, "immorality is the letting loose of feeling in opposition to the idea and the law in it; it is individuality in opposition to personality" (p. 244). In immorality, "will is defeated, the personality overcome, and the attuent subject it is which volitionizes,

just as a dog volitionizes. The subject takes possession of the personality, and uses it for its natural desires" (pp. 320, 321).

Professor Laurie's scheme of the virtues is based upon the several kinds of feeling or attuency which have to be moralized. Two main divisions are recognized, the egoistic and the altruistic. The former is called "appetition," and the corresponding virtue (or group of virtues) is temperance or self-control. Each desire naturally seeks its own satisfaction; it must be brought under the law of the life of an organism of desires. Altruistic impulse, or sympathy, which the author finds to be as "natural" as the egoistic, stands equally in need of moralization, organization, or subjection to the law of reason. When thus treated, it yields the virtues of justice, negative and positive, and benevolence. Negative justice is defined as "the freedom of each person to realize himself in so far as this is compatible with the freedom of every other member of the same society" (p. 161). "In so far as our fellow-men are unable to realize themselves, owing to obstacles for which not they, but we, are, directly or indirectly, responsible, our activity in their interest is . . . positive, as distinguished from negative, justice" (p. 183). "But when our good-will extends to the helping of others to help themselves, by sharing or removing burdens self-caused, or not due directly or indirectly to us or others with whom we are associated (and whose responsibilities, therefore, we share), the motive is one of benevolence" (p. 184). These virtues tend to pass into one another, as the emotion of humanity finds in them an ever fuller expression; "the force of the human emotion is, in many, perhaps most natures, so strong, that the boundary line between strict negative justice and benevolence is always being obliterated" (p. 182).

The discussion of the State is one of the most valuable parts of the book. The author insists upon an ethical conception of the State, as the great mechanism for the realization of personality. He combats the extreme view of it as the "social organism." "It is a mistake to regard the State or the social organism as the supreme end — as that for which the individual exists, the State realizing itself through him. . . . The State, at best, is the work of men's feeble hands, working with unsteady purpose; the person, with all his claims, is the work of God" (p. 69). But if "a State collectivism . . . in which the unqualified conception of an 'organism' logically lands us, is profoundly immoral" (p. 220), the theory of individualism is no less at fault. "The question, in truth, has not been for ages a question of individualism, but a question of personality" (p. 219). The acceptance of an ethical conception of the State means the abandonment of the *laissez-faire* principle, and the inclusion within the political sphere of positive, as well as negative, justice. Even the "ideal life" falls within the scope of the State's action; "the promotion

of religion, art, and science" is its highest function. The State is the great "ethical teacher of its citizens." The coercion which is characteristic of State action at lower levels must of course cease in these "ideal relations." The political limit is, in general, the same as the ethical. "With the ethical State, as with the ethical person in his relation to other persons, the limitation arises out of the duty imposed on every man to realize self *by self*, and therefore freely" (p. 252). Instead of acting vicariously for its citizens, the State should help the individual to help himself.

Such is, in brief outline, the ethical theory developed by Professor Laurie in this work. A single criticism may be suggested in closing. It will be seen that the author reaches an ethical position closely corresponding to the "dualism" of his metaphysic. The formal and the real, the rational and the attuent, remain apart in both spheres. In an ethical reference, reason without feeling is empty, yielding merely the form of law without its content. There is need, accordingly, of a "datum" or "raw material" of sensibility, as well as of sense. In both cases an "empirical instruction" is requisite. Yet feeling is described as "chaotic" (p. 156), "anarchical" (p. 147), a *mere* "raw material." The author entitles his theory "The Ethics of Reason," and fundamentally it seems open to the same criticism as the ethical rationalism of Kant. The insistence upon the ethical supremacy of reason is in both cases admirable, but the same injustice is done to feeling in both. Does not the epistemological parallel suggest that this ethical defect is due to a psychological error? Does not feeling, like sensation, already contain in it the germs of order and relation, to be developed by reason into law?

JAMES SETH.

SUMMARIES OF ARTICLES.

[ABBREVIATIONS. — *Am. J. Ps.* = *American Journal of Psychology*; *Ar. f. G. Ph.* = *Archiv für Geschichte der Philosophie*; *Int. J. E.* = *International Journal of Ethics*; *Phil. Mon.* = *Philosophische Monatshefte*; *Phil. Stud.* = *Philosophische Studien*; *Rev. Ph.* = *Revue Philosophique*; *R. I. d. Fil.* = *Rivista Italiana di Filosofia*; *V. f. W. Ph.* = *Vierteljahrschrift für Wissenschaftliche Philosophie*; *Z. f. Ph.* = *Zeitschrift für Philosophie und philosophische Kritik*; *Z. f. Ps. u. Phys. d. Sinn.* = *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*. — Other titles are self-explanatory.]

LOGICAL.

The Logical Calculus. I. General Principles. W. E. JOHNSON. Mind, New Series, No. 1, January, 1892, pp. 3–31.

I. Begins by attempting to enumerate briefly the principles common to every species of symbolic calculus: (1) the representation of symbols, (2) the convention of permanence of import, (3) the possibility of equivalence, (4) the method of substitution, (5) the propositional import of equivalence, (6) the inferential relation between equivalence, (7) the distinction between universal and particular symbols, (8) the applicational interpretation of universals, (9) the force of the bracket, and (10) the postulate of homogeneity. II. (§ 2) The Synthesis of Propositions. A. The inferential mode of synthesis has been prominent in traditional synthesis, but a more general view of synthesis is here taken, in which inference will be shown to be dependent on and subordinate to pure synthesis. B. The conception of a proposition in general is indicated by the article *not*. III. (§ 5) All that formal logic can do in the way of synthesis of propositions is contained in the laws regulating the use of the words *and* and *not*, *i.e.* logic is limited to a development of the conceptions of pure synthesis and pure negation. The fundamental laws or axioms that regulate these operations must now be given. IV. The Fundamental Laws of Propositional Synthesis (§ 6). 1. The Commutative Law: $xy = yx$. 2. The Associative Law: $xy.z = x.yz$. 3. The Law of Tautology: $xx = x$. 4. The Law of Reciprocity: $\bar{\bar{x}} = x$. 5. The Law of Dichotomy: $\bar{x} = \bar{x}y\ \bar{x}\bar{y}$. 1 says that the order of pure synthesis is indifferent; 2, that the mode of grouping in pure synthesis is indifferent; 3, that the mere repetition of a proposition does not in any way add to its force or alter it; 4, that the denial

of the denial of a proposition is equivalent to its affirmation; 5, that the denial of any proposition is equivalent to the denial of its conjunction with any other proposition, together with the denial of its conjunction with the contradictory of that other proposition. V. (§ 8) These results can be put into more familiar forms. We have two fundamental types of synthesis, — conjunctive and disjunctive. Each of these types has four varieties involving x, y, or their contradictories, *viz.* conjunctives xy, $x\bar{y}$, $\bar{x}y$, $\bar{x}\bar{y}$; disjunctives $\overline{xy}$, $\overline{x\bar{y}}$, $\overline{\bar{x}y}$, $\overline{\bar{x}\bar{y}}$. In our view there is no essential difference between the disjunctive, hypothetical, and alternative forms. This is shown symbolically. VI. (§ 9) Other Interpretations of the Disjunctive, Hypothetical, and Alternative Mode of Synthesis. VII. Other Modes of Synthesis than *not* and *and*, *e.g. if* and *or* (§ 10). VIII. (§ 11) The Primary Analysis of Propositions. The molecular proposition contains two sorts of elements, a *subjective* and a *predicative* term. The usual analysis of the predicate term into copula and predicate term is a verbal device, devoid of logical significance. IX. (§ 12) Synthesis of Propositions as modified by their Analysis: (1) of propositions containing a common individual derivative subject name; (2) of singular propositions containing a common predication, but different subjects; (3) of propositions which refer to the same aggregate subjects. X. (§ 13) Foregoing Principles applied to the Logic of Relatives. XI. Criticism of the preceding analysis. If the above analysis is correct, it will establish the point that all the familiar methods of formal logic and the less familiar results of relative logic depend, not on the peculiar relation of subject and predication, but on the proportional synthesis involved in the quantitative element of the universal or particular judgment.

PSYCHOLOGICAL.

Versuch, das psychophysiche Gesetz auf die Farbenunterschiede trichromatischer Augen anzuwenden. H. von HELMHOLTZ. Z. f. Ps. u. Phys. d. Sinn., Bd. III, Heft 1, pp. 1–20.

In the second volume of the above periodical H. had tried to formulate the psychophysic law so as to embrace more than one variable, *e.g.* the three variables in the determinations of the color sensations of trichromatic eyes. In the present article H. shows there is a close correspondence between the curve for color differences experimentally found by König, and the curve calculated from the extended pp. formula on the assumption of the three elementary fundamental colors. This verification of the formula gives a basis for the determination of the fundamental colors which are found to be provisionally, carmine red,

ultra marine blue, and yellowish green. The relation of these colors to the spectral colors is shown by the position of the latter within a color triangle of which the apices are the fundamental colors, and the gravity centre, white. According to this construction, spectral red, for instance, would be a whitish and yellowish modification of the fundamental carmine red. Moreover, the curve of the spectral colors shows that all the fundamental colors affect, with but little difference in intensity, all the nerve elements of the trichromatic eye, sensitive to light, simultaneously. It can be shown that the disagreement between the lacking color of dichromatic systems and any one of the given fundamental colors does not give rise to an insoluble contradiction. Newton's law of color mixing is applicable to the colors of the dichromatic system, and colored lights which appear like to normal eyes appear also like to dichromic eyes. The close agreement between sensitiveness to differences of color and differences of brightness corresponds to the author's supposition that perception of differences of color rests originally on perception of differences of brightness.

Untersuchung über binokuläres Sehen mit Anwendung des Heringschen Fadenversuchs. DR. RICHARD GREEFF. Z. f. Psy. u. Phys. d. Sinn., Bd. III, Heft 1, pp. 21–47.

In Hering's experiment, perception of depth was tested by the subjects determining whether a ball that fell across the plane of a vision, passed before or behind the point of fixation. With an improved form of Hering's apparatus the author found: 1st. Convergence of optic axes is not essential to perception of depth; the position of the line of fall of the ball, before or behind the point of fixation, was still determined, when, by means of lenses, the optic axes were made parallel or convergent. 2d. At distances too great for convergence and accommodation to come into play, binocular vision is retained so long as the ratio of the distance between the lines of fall, before and behind the point of fixation, to the distance of the point from the eye of the observer, is not less than 2 : 100. This corresponds to a projection of about 0.002 mm. on the retina. 3d. When clearness of vision in one eye is impaired, whether artificially or by disease, binocular vision is possible so long as the weak eye receives an impression of the object, however dim or indistinct the object may appear. 4th. The author found no case among children, in which, after operation for strabismus, perfect binocular vision was gained; the patients perceived the object through each eye, but could not join the percepts into the impressions of depth. It seems, accordingly, that the coalescence of the retinal pictures is a purely mental act, which can only be learned in earliest youth.

Die psychologisch-ästhetische Bedeutung des Licht- und Farben-contrastes. A. KIRSCHMANN. Phil. Stud., Bd. VII, pp. 362–393.

The purpose of this article is to show the importance to the artist of the effects of contrasts in lights and colors. The degree of success to which an artist attains in producing in the observer the ideas and states of mind intended depends upon three factors: the spiritual constitution of the observer, the position of the work of art, and the execution of the picture by the artist. Each of these factors is treated at some length, the discussion of the last, however, making up about three-fourths of the article. A special difficulty of the artist lies in the fact that in nature objects vary in brightness from the shining blue-white of the sky on a clear day to the absolute darkness of the deepest shadows, while the deepest black among the painter's pigments is 1-66 as bright as his clearest white. By means of the polarization-photometer K. has compared various natural objects with respect to brightness, and a table of fifteen such comparisons is given. The gray wall of a house in full daylight is to the bright sky as 1 to 50. The brightness of a very clear night sky is to that of the moon as 1 to 4800. It is only by the employment of contrasts that the artist can overcome the limited compass of brightness in the materials at his disposal. K. illustrates these contrasts of brightness by a consideration of the effects produced and means used in a number of well-known paintings. Besides contrasts of brightness those of color-tone and saturation are briefly discussed.

Visualization as a Chief Source of the Psychology of Hobbes, Locke, Berkeley and Hume. A. FRASER. Am. J. Ps., Vol. IV, pp. 230–247.

Just as men of different nationalities speak in different verbal languages, so do different types of individuals think in different thought-languages. In one type the characteristic thought-stuff may be visual, in another auditory, in another motor. The object of this paper is to offer a description and estimation of the sensationalist psychology in its first presentation by Hobbes, its development by Locke and Berkeley, and its culmination in the scepticism of Hume; in which an attempt will be made (1) to maintain that the predominating element in the thought of these men was Visualization, and (2) on the basis of this fact to offer a new criticism of the psychology of Sensationalism. A large number of quotations are given from the works of each of the above-mentioned philosophers, which show their dependence on visual images. What Hume cannot visualize he will not admit as belonging to thought or consciousness at all, but considers as "illusion." This scepticism is not the consistent outcome of *sensationalism*, but of *visualization*. It

results from being built on one side only of a many-sided foundation. The larger portions of our conscious life which we are liable to recognize as conscious are those which manage to translate themselves into visual terms. On this account the largest part of the content of consciousness is lost to view; all its finer connections and beautiful continuity remain, concealed in the anæsthetic senses, outside the primary consciousness. It is obvious that what is needed for a more complete view of consciousness is a more equal emphasizing and more harmonious development of the senses.

The Law of Psychogenesis. PROFESSOR C. LLOYD MORGAN. Mind, New Series, I, 1, pp. 72–94.

It is common to assume that in social, as in organic, evolution natural selection is the all-important factor; but the elimination of failures, which is the method of natural selection, is just what is prevented in civilized society. Natural selection has guided the mental symbolism to certain developments by eliminating those in whom the developments were absent. Selective mating is a product of the mental symbolism so developed. It is itself a product of psychogenesis. What is the law of psychogenesis? Since the present investigation is psychological, not metaphysical, we must keep strictly to the psychic plane, and leave out of account the question whether, and if so how, our experience stands related to a noumenal existence. It will also be well to start with the abstract region of concepts, and work down to the more practical level of percepts. What is "the law of truth"? I accept as true only what is in accordance with my own views and theories. This seems arbitrary, but observe that my views can and do change. They develop by the selection of the congruous, the rejection of the incongruous. In æsthetic and ethical matters the same general law holds; things are for me beautiful or ugly, good or bad, according as they are congruous or incongrous to my present æsthetic or moral nature. It is a mistake to hold that there is only one self-consistent ethical system. There are several such. But the ideal system must be not only congruous within itself, but in touch with the actualities of life and conduct. The ultimate appeal is to perceptual experience. From percepts have concepts arisen by analysis and abstract thought; to percepts must they conform in order to satisfy the final test of congruity. The constant demand of science for practical perceptual verification is justified by the essential unity of consciousness, the solidarity of mental symbolism, and the continuity of its development. On the perceptual plane the congruity, not of percept with object (in the sense of "occasion"), but of percept with percept is the rule. Here, and through the whole range of mental development, the guidance of pleasure and pain is of great importance. Our nature

is sensitive as well as intellectual, æsthetic, and moral. The painful is avoided as incongruous to our nature as sensitive. Only in this sense can it be said that all our actions are determined by pleasure and pain. While the law of psychogenesis is thus held to be a law of development by elimination of the incongruous, no attempt is made to account for the origin of the congruous. It is a theory of survival, not of origin.

Bemerkungen zur Associationslehre. W. WUNDT. Phil. Stud., Bd. VII, Heft 3, pp. 329–361.

After a short statement of the rival theories of association by similarity and by continuity, the author asks if problem of association cannot be approached from another side. Current theories of association have taken mainly successive associations into account, but the forms of simultaneous association, known as complications and assimilations, together with the simple, intermediate form of sensuous recognition, are also to be considered. Hence W. proposes successive and simultaneous associations as the fundamental forms. Complications are combinations of ideas from disparate senses: as such their elements are easily found by introspection. Assimilations are formed by the coalescence of ideas or parts of ideas from the same sense: every impression of sense sets a throng of tendencies left over from earlier impressions in sympathetic vibration: of this throng, some enter into fitting combinations with the given impression, while others remain below the threshold of consciousness. In this way illusions are formed. Inasmuch as memory-pictures as well as sense-impressions must be affected by the assimilative process, it may be said that every representation is a picture of fancy. Two combining processes underlie assimilation: firstly, the given impression calls up components of ideas like itself; secondly, the latter arouses other components not found in the given impressions, but still combined with it in former cases. The second form is mediate, and clearly a form of association by contiguity. As in the first form, only like elements are aroused, association by similarity does not take place: the fundamental processes of association are consequently the combination of the like and of the contiguous. In successive associations the same processes are at work: if to the given idea or perception like ideas attach themselves, we call the result association by similarity; if the objective connections alone are observed, we call it association by contiguity. The simplest case of assimilation is the cognition of an object; recognition of an object is the simplest case of successive association: into each of these as well as into the more complicated forms, both processes of association enter. As all feelings have a basis in ideation, the feeling of cognizing must result from indefinite memory-pictures in the background of

consciousness — probably those which give the assimilating elements to an impression of sense. Next to sensuous cognition comes immediate recognition, which may or may not be attended with representation of accompanying circumstances: the latter form shades off into mediate recognition when the accompanying circumstances connect impression with recognition. As an idea may be apperceived after its appearance in consciousness, it may be that associated ideas, apprehended after recognition takes place, mediate between impression and recognition. It may also happen that the auxiliary ideas, after bringing about a recognition, disappear before they rise to apperception. Mediate and immediate recognition, with or without associated ideas, would thus be reduced to one form. The peculiar feeling which accompanies recognition is in evidence of this view. Similar to the feelings of cognition, though more intense, feelings of recognition are aroused by contact associations. If recognition only took place when one idea called up another similar to it, recognition would amount to assimilation. Of the presence of the auxiliary ideas, producing the feeling of recognition, there can be in cases of mediate recognition no doubt. From experiments with instantaneous impressions we may infer that in cases of immediate recognition without attendant ideas, we are still darkly conscious of the latter: the alternative hypothesis, that the feeling is due to ideas below the threshold of consciousness, would lead to the assumption that ideas which have disappeared from consciousness retain the properties of ideas present in consciousness. Sensuous recognition is the connecting link between simultaneous and successive associations: it differs from the latter in that the acts of ideation do not follow one another, but happen together. This simply means that some of the parts of an associated whole take more time to rise to apperception than others: if the principal part of an idea is first assimilated, while the secondary ideas arise later, we have a case of association by contiguity; but if out of an indefinite number of assimilating ideas, one alone is apperceived, we have association by similarity. One outcome of the reduction of cognition, recognition, and association to the same fundamental processes is, that every idea which is not aroused by impressions from without, rests on associative influences. In cases of the emergence of seemingly unconnected ideas, it can be experimentally shown that the connecting link is present though not perceived. Consequently we can lay down the proposition that all changes of ideas, not arising through direct impressions of sense, rest on association; that is, on the unbroken complication in which are connected together all tendencies towards revival of ideas once experienced and still accessible to consciousness.

Die Gesetzmässigkeit der psychischen Activität. H. HOFFDING, V. f. W. Ph., XV, 4, pp. 373–391.

The moral feelings (especially the feeling of remorse or guilt) seem to many to be connected with the idea that one could in a given case have acted differently, and the validity of this idea is made the condition of the continuance of these feelings. This is to confuse the standpoint of psychology with that of ethics. The psychologist has not to prove the validity of the idea which determines the feelings, but only to show how this connection has arisen. (1) The more demands a psychical condition makes upon the interest and attention, the more do we neglect the conditioning circumstances. This is especially true of a serious decision of will, where the new state, connected with the thought of action, is in opposition to that of inner strife and consideration. (2) The decision brings with it a peculiar feeling of unrestrictedness or force which drives into the background the thought that this state has been caused. (3) The memory of the state of deliberation leads us to conceive the objective possibility of a different decision. (4) The condition of the ego looking back upon the act with remorse is widely different from that in which it made the decision, yet we ascribe to the past ego both the force which led to the decision, and that which at the present moment leads to its condemnation. (5) The future appears undetermined because we cannot form any clear picture of it without pictures of other possibilities coming in. The feeling of remorse has ethical value only as it awakens an impulse to improvement. Mere brooding over what cannot be helped is unethical. Remorse arises from the sharp contrast between what my own conviction recognizes as right, and what memory reveals to me regarding the disposition of my will. Nor can it be said that, from a deterministic standpoint, remorse does not differ in kind from the pain which is felt because of some physical or mental defect; for, (1) in the will, the real self finds its most emphatic expression, and, therefore, the self-condemnation is strongest and deepest; and, (2) a change of will is not impossible, just in virtue of its lawfulness. When we pronounce ethical judgments upon others, the question is not whether or not they could have acted otherwise; but we blame an act in order that the will may become other in future. We have no right to pronounce ethical judgment upon others except from ethical motives. Every one who expresses an ethical judgment uses forces which are among the strongest and deepest in the world, and imposes upon himself, therefore, an ethical responsibility.

Du Rôle de la Volonté dans la Croyance. J. J. GOURD. Rev. Ph. XVI, 11, pp. 467–482.

The term *belief* is used in three senses. (1) Every judgment embraces a belief and every belief is indicated by a judgment. (2) In the narrower sense of constant belief, belief supposes the repetition of the same thought on the same subject. (3) The belief itself becomes the subject of belief, and is judged from the point of view of truth. The will is an essentially practical mental function, which determines, produces, acts. Though necessarily determining its effects, it is itself causeless. Although will cannot determine a judgment, which is made independently of volition when the idea agrees with the idea of being, it can and does determine the *terms*. If then will can influence a single judgment, it can influence several, causing the same to be repeated each time. Again, when we judge a belief to be true, we pass a judgment, and as every judgment is controlled by the will, the belief in the truth of a belief also becomes a product of volition.

Ethnologie und Aesthetik. E. GOSSE. V. f. W. Ph., XV, 4, pp. 392–417.

Although many of the mental sciences have been enriched and extended by the study of Ethnology, yet Æsthetics has not yet taken advantage of the vast mass of material which this science has presented. The time, however, seems near when students of Æsthetics will perceive that many of its problems can only be solved with the help of Ethnology. Æsthetic feelings, the subject-matter of Æsthetics, are feelings of pleasure and pain, which are distinguished from other such feelings, in being immediately called up either by some sense-perception or by a representation. The task of Æsthetics consists in discovering the essence, conditions, and development of the æsthetic feelings. For the first of these problems the ethnological method will not prove helpful. Every æsthetic feeling is (1) the function of a subject in whom it is excited, and (2) of an object perceived or represented by which it is excited. The question of the objective conditions can only expect a result when it addresses itself to the simplest possible cases. A universally valid objective condition for the æsthetic feelings cannot be found by investigating the objects which belong to any limited circle, or grade of civilization, but only when we have before us the full results of ethnological studies. Objects pleasing to one person are often indifferent to another. The objective factor is the same, the difference lies in the æsthetic receptivity of the persons concerned. We can, however, speak of a typical æsthetic sensibility of a race and of a time.

If we ask upon what these differences of taste in different peoples and times depend, some general statements as to the influence of culture and climate are all that can be given. An exhaustive and sufficient explanation of an individual case has long been sought in vain. It is only those relatively simple relations which exist among races of a low grade of culture which promise any result to investigations. Any really scientific law of art is only possible through the utilization of that rich and simple material which Ethnology offers us of the primitive races.

ETHICAL.

The Idea of Value. S. ALEXANDER. Mind, New Series, I, 1, pp. 31–56.

The distinction between judgments which are mere statements of fact and "normative" judgments is commonly regarded as ultimate, but this is because the notion of value has not been properly analyzed. To do this is the object of the present paper. Those who maintain that the distinction between fact and value is ultimate, confuse the practically invaluable with the theoretically unique. Ideals are but the formulation of desires. Only in one respect can they be regarded as unique: they are systematic wholes. But this results from the systematic character of society itself and of the individuals who compose it. Thus "Sollen" is a form of "Seyn." The goodness of the good act is the approval of it by the good man. Destroy the good man, and the moral order perishes too. We call those good who promote the efficiency of society, and help to maintain the equilibrium of forces which society represents. The growth of standards and their application is a purely natural process. Fact and value, then, do not stand opposed to each other. Value is the mere expression of the fact that a solution has been found of the problem how to reconcile certain sentiments into an organized whole. Pleasure is an important test of value, but is not for that reason to be regarded as determinative of the latter. Both pleasure and value are dependent upon character. What will give a man pleasure depends upon his character; pleasure is a function of character, not character of pleasure. Character is the determining cause of our ideals, and on it the idea of value is founded.

Authority in the Sphere of Conduct and Intellect. H. NETTLESHIP. Int. J. E., II, 2, pp. 217–232.

Authority here is the power that in conduct determines practice and in thought assent. A desire for it is universal and at present largely

unsatisfied. Some are capable of forming convictions, others not. The former, to whom we owe the great constructive moral movements, find authority in their own moral passion; the latter are sceptical and tend to find authority in force. At the present time we are in danger from the latter. We need more authority of the former type. It is of four kinds, the authority of law, of religion, of public opinion, of great men. The permanent element in the four is the moral feeling of the society involved. The authority of public opinion is stronger than the former two, but is itself dominated by the authority of the leaders of moral feeling and of intellectual activity. Yet even their influence is permanent only in proportion as it tends to improve society. All permanent authority rests on a social basis. The seat of authority for the individual is his own conscience; where this is in doubt recourse should be had to the records of past experience especially of great men as a guide in conduct, and to living leaders as a guide in thought.

La Maladie du Pessimisme. B. PEREZ. Rev. Ph. XVII, 1, pp. 36–50.

Are there, in reality, for every malady or morbid diathesis certain pronounced psychical manifestations? Psychological physicians must guard themselves from hasty generalizations; they are too ready to show to psychologists that their science cannot be an independent one without being chimerical. P. makes this reproach to the authors of two theses which he examines here: *O Pessimismo no ponto de vista da psychologia morbida.* J. de Magalhães. Typ. Universell. Lisbonne, 1890. (2) *Des Rapports de l'arthritisme avec les manifestationes nerveuses.* Dr. G. Huyghe. Jouve, Paris, 1890. Is pessimism really a malady or the result of a morbid diathesis? M. Magalhães has found in the personalities of several men who are considered as in a sense pessimistic as, *e.g.* Schopenhauer, Flaubert, Baudelaire, Amiel, Byron, and in others such as Tolstoi, Swift, Shelley, A. de Vigny, Schiller, Berlioz, etc., etc., the mental state of which pessimism is the literary or philosophical form; such morbid indications as nervous instability, irritability, hyperæsthesia, hyperalgy, irresistible impulsions, etc. Pessimism according to him is a neurasthenia, of which the fundamental character is nervous instability with alternation or constant combination of irritability and feebleness; from this fundamental hyperæsthesia result discords between the sentiments and the intelligence, between the sentiments, between the ideas and volitions. All these characters reveal excess of subjectivity. P. finds that we must get more proofs before we can grant that the alterations of character attributed to the pessimist are pathological phenomena; at least, if we regard pessimism as a malady we cannot

characterize it simply as neurasthenia. In the book of M. Huyghe the inverse of pessimistic states of mind is arthritism, a morbid diathesis characterized by a tendency to local congestions of various kinds. In regard to this P. finds that the connections of arthritism with pessimism are defined with just about the same evidence, and imperfect evidence, as are the connections which M. Magalhães finds to exist between pessimism and neurasthenia. It is evident that the whole of pessimism is not arthritism, and that all arthritism is not pessimism.

The Ethics of Hegel. J. M. STERRETT. Int. J. E., II, 2, pp. 176–201.

There is an obvious continuity between the diverse ethics of Kant and Hegel. Both start from man, but Kant considers the subjective ego, Hegel the objective ego. Both seek to obey the command, "Know thyself," but the self was different to the two. To find it Kant looked inward and Hegel outward. The difference between them is thus the difference between an abstract self and a concrete self. Hegel avoids all abstract conceptions. True, he starts from them, but only in order to criticise and pass beyond them to a real concrete. To him there can be no duty without an objective good and hence Kant's formal law is valueless. After this introduction the remainder of the article (pp. 180–201) is a brief exposition of Hegel's ethics, based mainly on the *Grundlinien der Philosophie des Rechts*

METAPHYSICAL AND EPISTEMOLOGICAL.

Les Origines de Notre Structure Intellectuelle et Cérébrale. I. Le Kantisme. II. L'Evolutionisme. A. FOUILLÉE. Rev. Ph., XVI, 11, pp. 433–466; XVI, 12, pp. 570–602.

There are three responses possible to the question of the active and proper force of the intelligence in face of the world; pure naturalism, pure idealism (both of these have the common error of intellectualism — the seeking to explain our ideas and mental structure in the nature of intelligence, whether active or passive), and the theory of F., which finds an explanation to a great extent of the forms of thought in the functions of will and in those necessities of life to which Lamarck and Darwin have drawn the attention of philosophers. Instead of "returning to Kant," let us pass Kant, pass Schopenhauer even, pass Spencer too; according to a true evolutionism ideas ought to become the supreme forms of life and volition, instead of remaining inactive in a world ruled by material laws. The question of idea-forces (*des idées-*

forces) lies underneath the question of the origin of ideas. The point of this paper is to show the inadequacy of the *a-priority* by which Kant explains the forms of knowledge, whether he considers the negative character of *a-priority* or independence of experience, or the positive character — spontaneity of the thinking subject. The criteria of irreducibility and necessity are also inadequate. The Kantists can never prove that the matter of thought will with docility take on the forms they want to give it. Nothing but the mere form of identity can be got out of intellectual spontaneity; intellectual spontaneity too instead of explaining causality presupposes it. Whence the activity of thought for Kant? Hegel's creative thought is the natural explanation, but Hegelism is anthropocentric; Kant too is a Ptolemy rather than a Copernicus. In the theory of ideas, as in nature, we must introduce a point of view akin to that of Laplace, which believes in one substance universally extended which includes everything in itself; under form more or less implicit, sensibility and will of ideas are only the condensations in luminous centres and in conscious hearths of that which exists everywhere as sensation and desire; physical movement becomes conscious desire, and *nihil est in intellectu quod non prius fuerit in sensu et voluntate.* F. at once draws from and embraces Schopenhauer. II. L'Evolutionisme. The *cerebral* structure may have several origins: 1st. The direct action of environment on the brain and consciousness by means of the senses; 2d. Acquired habit which is then transmitted by heredity; 3d. Natural selection; 4th. The fundamental laws of life; 5th. The universal constitution of elements from the physical and psychical point of view. All systems which neglect one or other of these causes are incomplete, and cannot explain the genesis of cerebral and mental forms. Spencer's theory of the explanation of the structural forms of the brain and thought by association of ideas strengthened by heredity, takes firstly, only account of sensations and not of other mental functions such as emotions and volitions, and secondly, accounts only for superficial mental forms and not for essential forms such as time, space, cause, etc. The second theory of the hereditary transmission of acquired habits is now disputed by some biologists, *e.g.* Weissmann. Thirdly, we cannot grant that happy molecular accidents suffice to explain the roots of universal and necessary beliefs; the characteristic, too, of the mind is not passivity but reaction — vital necessity is the mother of intellectual industry. We must now show the intimate relations which bind necessary beliefs, chiefly those of identity and sufficient reason, to biological laws of motor reactions, and to psychological laws of desire or volition. Life has for its first law that of preserving itself (root of principle of identity), for its second that of developing itself (root of principle of sufficient reason — every being reacting on

nature in an intelligent anticipatory manner). These two laws also apply to social science, wherein we may observe a logical determinism. Thus in all its aspects thought though individual is yet collective; though subjective, it is yet objective. It is so because the forms of our thought are the functions of a primæval and normal will, to which correspond the essential functions of the physiological life. The will which is spread throughout all the universe has only to reflect inself progressively on itself, and to acquire a greater intensity of consciousness to become in us sentiment and thought. The movements of intelligent will are constitutive idea-forces.

Professor Clifford on the Soul in Nature. F. C. CONYBEARE. Monist, II, 2, pp. 209–224.

Clifford's theory is summed up as follows: (1) Matter is a mere picture in which mind-stuff is the thing represented. (2) Reason, Intelligence, and Volition are the properties of a complex which is made up of elements, themselves not rational, not intelligent, not conscious. After divesting feelings of the character which they have as gathered up into the unity of a self it is hard to see what is left. If they are to constitute the cosmos, they must have certain definite relations to each other; but relations are constituted by, and exist only for, a self. Nor is it intelligible how the mind is made up of mind stuff. Even if the molecules of my brain were each in possession of a consciousness as ample as my own, their mere juxtaposition could not give rise to my self-consciousness. Their soul-states would always remain theirs, and mine remain mine. Again C. tells us that the laws which govern the sequence and coexistence of feelings are counterparts of those which govern physical phenomena. He does not see that with the reduction of the real to feeling, physical facts disappear, and with them the laws to which the laws of feeling shall correspond. We must not allow to C. any more than to Hume the postulate of a real world, which shall give the cue to feelings when to follow and coexist.

Le Problème de la Vie (Article I). CH. DUNAN. Rev. Ph., XVII, 1, pp. 1–36.

Physiology recognizes five characteristics of the living being: (1) organization, (2) generation, (3) evolution, (4) nutrition, (5) deterioration, disease, death. These cannot be explained by physico-chemical laws. The conception of nature demands a primitive formal element. The question is, How can the dualism between vitalism and materialism be avoided. Whoever admits universal mechanism must also admit the presence in matter of a principle of organization. The most natural solution of the difficulty would seem to be the explanation of Leibniz.

The universe is subject to two sets of laws, which are in harmony with one another and organize cosmic matter, — the law of efficient causes and the law of final causes. Yet D. rejects this system on account of the insufficiency of both the mechanical and teleological hypothesis on which the reasoning rests. As space is only the universal and necessary form of corporeal nature, motion cannot be regarded as the fundamental phenomenon, to which all phenomena are reducible. Motion is not a primordial, but a derived or relative phenomenon founded on some anterior reality. It is an abstraction, a necessary consequence from the fundamental principle that the universe is a unity, and that there is an absolute connection between all phenomena. Each phenomenon has for its antecedents and conditions all the other phenomena of the universe. Scientific knowledge of a particular existence is therefore impossible. A divine intellect would understand phenomena not according to laws and causes, but by the concrete principles of which each concrete reality is formed. Motion is a law of nature, the most abstract and general of all laws. Such laws express the nature and demands of our mental constitution rather than the true constituent principle of phenomena. The mechanical theory must be rejected as an unintelligible conception. But assume it to be true, we find the other support of Leibniz's theory, that of final causes, untenable. The only way to explain organisms by means of a thought, co-ordinating the movements of matter, is to determine the end aimed at by that thought, and to show that the constitution of individuals and species would be the best means of realizing the same. Neither the view of transcendent nor immanent teleology is acceptable. But assume an immanent end, then we must show that its idea is really realized in the world, which cannot be shown. The intervention of the law of sufficient reason does not satisfy us. It is no explanation to hold that the co-ordinated existences have been desired and produced by a thought or by any other force of psychical nature. Granting the doctrine of final causes, do the elementary movements of matter form a multitude of co-ordinate systems in one system embracing all? Under such a co-ordination there could be no mobility, no evolution such as is observed in organized beings. The teleological theory further demands that the co-ordinating force be in the elements themselves. We can form no satisfactory conception either of these elements or the nature of the organizing power. The latter cannot be explained to be a tendency or a desire, for neither the one nor the other of these is able to co-ordinate the elements in organic nature according to mechanical laws and in conformity with a certain end. Mere desire or impulse knows no such laws. We must, therefore, add to this organizing principle the idea of mechanical laws, and the idea of the end. This gives us three powers, the harmonious action of

which is an impossibility. The difficulties of the teleological conception render its acceptance impossible. We must start from something concrete and real, as from something fundamentally given, and proceed to the parts, elements, and conditions. Metaphysical thinking requires that we regard the metaphysical being as something primordially given, and absolute as to time.

Mental Evolution. An Old Speculation in a New Light. C. LLOYD MORGAN. Monist, II, 2, pp. 161–177.

M. confines his speculations within the field of mental evolution in animals. If so highly intelligent an animal as the dog sprang from the amœba, the latter cannot be an insentient automaton. If it is, where did consciousness creep in? To say that it is potentially present in the germ is an ambiguity. Nor is consciousness either a product of brain-tissue or a mode of energy, but something *sui generis*. The phrase that consciousness is called into existence by physical processes is also unintelligible. M. adopts the hypothesis of scientific monism, according to which consciousness and brain-energy are respectively the subjective and objective aspects of the same occurrences. From the simpler modes of energy in the simpler organic substance of the ovum the more complex modes of energy have been evolved. Similarly, the complex and orderly states of consciousness have emerged from something simpler than consciousness, but of the same order of existence, which answers subjectively to the simpler organic energy of the fertilized ovum. As the complex molecular vibrations of the brain are to the simpler molecular vibrations of the ovum, so are the complex states of consciousness associated with the former, to the simple states of infra-consciousness associated with the latter. All organic modes of energy are associated with conscious or infra-conscious states. Thus molecular vibrations in the brain are sometimes attended by consciousness, sometimes not, there being unconscious cerebration. If there are such infra-conscious states in the cerebral hemispheres, why should there not be associated with every molecular thrill of the living body yet lower states of infra-consciousness? We go a step further and say that all modes of energy, whether organic or inorganic, have their conscious or infra-conscious aspect. This doctrine is necessarily implied in the phrase "mental evolution" for all thinkers who have grasped the distinction between consciousness and energy.

Facts and Mental Symbols. E. MACH. Monist, Vol. II, pp. 198–208.

Our theories are abstractions, which, while they place in relief that which is important for certain fixed cases, neglect almost necessarily, or

disguise, what is important for other cases. We should distinguish sharply between our theoretical conceptions of phenomena and that which we observe. The theoretical conceptions of physics — light-waves, molecules, atoms, and energy — must be regarded as mere helps or expedients to facilitate our viewing things. Even within the domain of physics the greatest care must be exercised in transferring theories from one department to another, and above all more instruction is not to be expected from a theory than from the facts themselves. Much greater confusion is produced by the direct transference of theories, methods, and inquiries that are legitimate in physics into the field of psychology. The entire theory of the psychological origin of the "external" world by the projection of sensations outwards is founded on a mistaken transference of a *physically* formulated inquiry into the province of psychology. The artificial and unnecessary dualism of feeling and motion has arisen by the improper formulation of the questions involved. Every physical notion is nothing more than a definite connection of sensory elements. In the sensory sphere of consciousness everything is at once physical and psychical. There is, therefore, no opposition of physical and psychical, no duality, but simply identity.

Are there Things-in-Themselves? EDITOR. Monist, II, 2, pp. 225–266.

The term "thing-in-itself" in the sense of a thing as it is independent of sensibility, would better be called "the objective thing," and we shall so call it, to distinguish it from Kant's thing-in-itself. The idea of a thing-in-itself has found support in a mistaken conception of the unity of certain things, especially of organisms. The mind is a product of the world; it is a system of symbols representing the things of the world and their relations, including such possible relations as are worthy of aspiring for. The idea of a thing-in-itself, and the unknowableness of the thing-in-itself are the basis of all agnosticism. Neither nominalism or realism are right, but if properly interpreted they are complementary: "universals are real," says the realists, *i.e.* the forms and relations of things are actualities; "universals are laws," says the nominalists, *i.e.* the relations and forms in which we describe the world are mental symbols. Positivism, *i.e.* the representation of facts without any admixture of theory or mythology, is an ideal which in its purity perhaps will never be realized. Science cannot dispense with hypotheses, with theories, with mythology. The world is not rigid being but activity, not absolute existence but a system of changing relations, not an abstract *Sein* but a concrete *Wirklichkeit* — a constant working of

cause and effect. There is no dualism in this, for the *Wirklichkeit* is one and undivided. These are not separated things, in the sense of isolated, absolute, or abstract beings, although we may speak of them as such for our ephemeral purposes.

HISTORICAL.

A Sketch of the History of Psychology among the Greeks. C. A. STRONG. Am. J. Ps., IV, 2, pp. 177–197.

This sketch is an abstract of six lectures given at Clark University in 1890. I. The animistic notion of the soul among the pre-Homeric and Homeric Greeks. They believed the soul to be closely connected with the breath, and to have its seat in general in the blood. Sensation, thought, and volition are functions of the living being, *i.e.* of the complex of soul and body, not of the soul alone. Psychical activities, including perception and thought, have their special seat in the breast. II. Thales, Hippo, Anaximenes, Diogenes of Apollonia, Herakleitos, Empedokles, and the Pythagorean school. The psychology of these philosophers is determined in the main by their cosmological theories. III. Demokritos and Anaxagoras. Demokritos regards the soul as distinct from the body, though on atomistic principles it is necessarily corporeal. These atoms are of the finest and most mobile kind; this harmonizes with the nature of thought as a subtle kind of motion. Demokritos' psychology is in the main a reproduction of primitive animism. Anaxagoras does not get wholly beyond the view of his predecessors that the soul is a refined form of matter. Up to his time he marks the widest departure from animism. IV. This lecture is devoted to a more detailed exposition of the views of Demokritos on the physiology and psychology of the senses. V. The Sophists, Sokrates, and Plato. The psychology of Plato is largely influenced by ethical considerations. There is no idea of the soul, for this would be equivalent to denying its immortality, which his ethical doctrine forbids. Plato, therefore, assigns the soul to a middle position between ideas and individual things. The Platonic divisions of the soul and sense-physiology occupy most of the lecture. VI. Aristotle. The doctrine of Entelechy, the classification of soul-functions, the physiology of the senses, and the doctrine of active and passive reason are briefly treated in pages 192–197. S. finds Aristotle's psychology distinctly monistic. Aristotle's method he characterizes as a biological-developmental one.

Zur Echtheitsfrage des Dialogs Sophistes. E. APPEL. Ar. f. G. Ph., V, 1, pp. 55–60.

This article is called forth by an article of Schaarschmidt's in the *Rhein.-Mus.* (Neue Folge, XVIII, p. 1 ff.), in which the *Sophistes* was held to be unauthentic. Schaarschmidt's objection to *Sophistes* is based on the fact that the idealistic doctrine, which is attacked in *Sophistes* 246, 248, and 249, is identical with the Platonic doctrine as we find it in dialogues of undoubted authenticity. The Platonic teaching of the holiness and exaltedness of the world of ideas is ridiculed in *Sophistes*. A., without discussing the view of Schaarschmidt, gives the passages in the *Sophistes*, along with those in the undoubtedly genuine dialogues, in which mention is made of the doctrine of ideas.

Platon und Aristoteles bei Apollinarios. J. DRÄSEKE. Ar. f. G. Ph., V, 1, pp. 67–83.

D. objects that it is one-sided to call Apollinarios of Laodicea a Platonist on the ground of his threefold division of man: *σῶμα, ψυχή, πνεῦμα.* The custom in general of dividing philosophers into Platonists and Aristotelians he finds erroneous. This he finds particularly true in the case of Apollinarios, whose independence of thought forbids his being classified as a follower of this or that leader. D. then proceeds to give the evidences of both Platonic and Aristotelian influence in the writings of Apollinarios, which show him to have been well schooled in the philosophies of both philosophers, without being their dependent. In the writing falsely ascribed to Justin Martyr, *Λόγος παραινετικὸς πρὸς Ἕλληνας*, D. finds evidence of the close acquaintance of Apollinarios with the writings and doctrines of Plato. Apollinarios says (Cap. 20) that the teaching of Moses and the Prophets on God, which Plato learned in Egypt, was accepted by him, but that, intimidated by the fate of Sokrates, he explained the doctrine differently for believers and unbelievers. *Timaios* 27 D and 28 A are quoted by Apollinarios as proofs of Plato's belief in the downfall of the created gods. In Plato's words, *ὁ μὲν δὴ θεός, ὥσπερ καὶ ὁ παλαιὸς λόγος, ἀρχὴν καὶ τελευτὴν καὶ μέσα τῶν πάντων ἔχων* (*De Legg.* 715 E), he finds a direct reference to Moses (Cap. 25). Apollinarios finds that the *Republic* (330 D E, 331 A, 615 C D E, 616 A B) proves that Plato got not only the doctrine of the last judgment, but also of a resurrection in which the Hellenes did not believe, from the Prophets. Apollinarios also refers Plato's doctrine of ideas (Cap. 29) to Moses, and finds the myth of the winged wagon of Zeus in Ezekiel (10. 18, 19). He declares that Plato not only teaches the same doctrine of God as Moses, but that he follows him even in expression, *e.g. θεοὶ θεῶν, ὧν ἐγὼ δημιουργός* (*Tim.* 41 A), which he treats

at length (*Cohor.* Cap. 20, n. 13; 22, n. 13; 24, n. 5). In Cap. 23–25 he points out the palpable contradictions involved in *Timaios* (27 D–28 A; 41 A B). In Κατὰ μέρος πίστις D. finds μέρος γὰρ ἅπαν ἀτελὲς τὸ [ἐκ] συνθέσεως ὑφιστάμενον (Lagarde, p. 107, 20 ff.) Aristotelian in conception and expression. With this he compares *Eth. Nic.* X, 3, 1174. 20, and *de An.* III, 6, 430 a 27. D. calls special attention to the passage preserved by Justinian (Mai, *Script. vet. nov. coll.* VII, p. 310) from the Syllogisms of Apollinarios to prove the thorough acquaintance of Apollinarios with Aristotle. With περὶ τριάδος (from the writing Ἔκθεσις πίστεως falsely ascribed to Justin) c. 14. p. 386 B, D. compares Arist. *Phys. Auscult,* II, c. 6.

Dion Chrysostomos als Quelle Julians. K. PRAECHTER. Ar. f. G. Ph., V, 1, pp. 42–51.

P. attempts to show that the Emperor Julian, especially in his second speech, had Dion Chrysostomos before him. The Sophists and poets praise external show and mere success in arms (Jul. *Or.* 2. 76, b); Sokrates, on the contrary, says that it is not the rulers able to cut through Athos and bridge the sea, who are happy; only the virtuous are happy (p. 79, a f). The parallel to this, with mention of Athos and bridging the sea, occurs in Dion, *Or.* 3. 44. 12 ff. A throne brings no happiness to the wicked; he only experiences the fate of Phaethon (83, c f *seqq.*). Dion (*Or.* 1. 10. 19 ff.) employs the Phaethon myth in the same way. Jul. *Or.* 2. 85 c, shows plainly the use of Dion, *Or.* 4. 82. Further, Julian's second speech, 86 a–92 d, contains a description of the character of the true king. Dion, *Or.* 1. 4 and *Or.* 3. 43, gives a description which furnishes a model for Julian. The true ruler is, according to Jul. *Or.* 2. 86 d, φιλόπολις καὶ φιλοστρατιώτης; according to Dion, *Or.* 1. 6. 29, he is φιλοπολίτης καὶ φιλοστρατιώτης. Julian demands (89, c f) that the king shall have nothing to do with the punishment of offences to which a death penalty attaches. His sword shall not be wielded to the destruction of a citizen, just as amongst the bees the queen has no sting. The bee-queen is employed similarly by Dion, *Or.* 4. 75. 14 f.

The Ethical Teaching of Sophokles. A. FAIRBANKS. Int. J. E., II, 1, pp. 77–92.

Sophokles emphasizes three allied causes of sin, viz. selfishness, self-assertion, and pride. F. cites Polyneikes as an example of selfishness; of self-assertion, Œdipus, whose impetuous temperament made him carry to excess the Greek ideal of a large and vigorous manhood; of insolent pride (ὕβρις), Kreon, who makes laws contrary to sacred

custon. and divine law, and demands absolute obedience to them. F. finds Sophokles' ideal man truthful and sincere. As an instance he cites Neoptolemos. The wily plans of Odysseus, on the contrary, fail; the stealth of Aias is punished by madness, and Herakles' treachery in slaying an enemy results in his death. Further, author finds devotion to the state, as a virtue, exemplified in Œdipus; he deduces also from the same character that reverence for the gods was an essential feature in the Greek ideal. He (F.) believes these ethical ideas to be the product of the age in which Sophokles lived, though he was in advance of the actual ideals of the time. The Sophoklean conception of virtue and duty are characteristic of Greece in general from the fact that they are æsthetic rather than ethical. The beautiful and the proportionate in conduct awaken enthusiasm; a grand fault is better than a weak virtue, and conscience is, with Sophokles, a sense of conformity to an æsthetic ideal. This æsthetic ideal, F. goes on to say, is embodied for the Greek in the eternal relation of things, in natural law in the moral world.

Beiträge zur Gesch. der englischen Philosophie (II). J. FREUDENTHAL. Ar. f. G. Ph., V, 1, pp. 1–41.

This is a study of the life and philosophy of Sir William Temple, born in 1553, entered King's College in 1573, where Digby was his tutor. He studied the Aristotelian logic at first with enthusiasm, but soon became an opponent. Afterwards he became secretary to Sir Philip Sydney, and later to the Earl of Essex. On the trial of the latter, he was accused of having also had a share in the plot against the queen, and compelled to go into banishment for some time. After his return he was made president of Trinity College, Dublin, and retained this position until his death in 1626. His character was unblemished, and though he was a fierce opponent yet he fought with arguments, and not by means of personalities and reproaches. His writings are nearly all polemics against Aristotle and the School-men. No one, not even Bacon, has more vigorously protested against false authority. He defended Ramus against the attacks of Digby and others; but both he and Ramus, while believing that they had freed themselves from authority, adopted the scholastic physics, psychology, and metaphysics. In religion, he maintained the most orthodox position, acknowledging the Scriptures as the supreme test of authority. He was one of the first in England who ventured to enter the lists against Aristotle and the Scholastics, and thus contributed his share towards breaking the chains which held English thought in bondage. Long intercourse with Temple must have strengthened that opposition to Scholasticism which shows itself so strongly in Bacon's

works. Although Bacon drew from the whole field on ancient and modern literature, yet we must seek before all in the writers of his own country for the germs of those thoughts which have made his name illustrious.

Leibnitz über das Principium Indiscernibilium. C. I. GERHARDT. Ar. f. G. Ph., Bd. V, Heft 1.

Gerhardt gives an unpublished Latin letter of Leibnitz, *Ad. R. P. Cosani Lectorem Theologiæ in Collegio Clementino urbis Romae*, in which he refers to a conversation with the Herzogin Sophie von Hannover, which from the letter must have taken place before his great journey through Germany to Italy (1687–1690). The letter maintains that two things can never be found to differ from each other without differing not only by external but by internal marks; *e.g.* two eggs however like externally will be found to contain some internal differences; nor could two globes, placed on each other in imaginary space, be thought even by an angelic or divine intelligence to be exactly equal. This Leibnitz maintains is confirmed by experiments made in the Herrenhausen garden by the Princess. Also no two human minds, though not differing from each other's kind, could ever be thought to be perfectly similar to each other; the minds of Judas and Christ, *e.g.* looked at in themselves, could never be pronounced alike. No two things, then, either in mind or in matter are perfectly alike.

The Changes of Method in Hegel's Dialectic (I). J. E. MCTAGGART. Mind, New Series, I, 1, pp. 56–71.

The method by which Hegel proceeds from one category to another changes as we pass from the earlier categories to the later. These changes can be reduced to a law from which important deductions can be made regarding the nature and validity of the dialectic. (1) The further the dialectic goes from its starting-point, the less self-centred and independent do the *categories* appear; and the more permanent becomes the *process*, until, finally, it is seen to be the only real meaning of the categories. (2) In the categories of Being the thesis and antithesis are neither of them superior to the other. An advance is first made by both being included in the synthesis. In the categories of Essence and the Notion there is no longer an opposition produced by two terms, and mediated by a third; but each term is a direct advance on the one before it. (3) Instead of sudden variations of method as we pass from one great division of the dialectic to another, these seem rather to be evidences of continuous development. (4) This change in method has not destroyed the validity of the process. (5) From this follows the

subordinate place of negation in the process. Hegel's logic does not rest on the violation of the law of contradiction, but rather on the necessity of finding for every contradiction a reconciliation in which it vanishes. (6) The finite categories are all contained as elements in the absolute, and the question arises in what relation they stand to each other as thus constituting its moments. It does not seem that this relation is the same in which they stood as finite categories in the process. For the truth which is at the bottom of the whole dialectic is the unreality of any finite category against its synthesis. The procession of the categories, with its advance through oppositions and reconciliations, does not present absolute truth, as Hegel supposed. For in the true process of thought, each category develops from the preceding by rendering explicit what was before implicit, and this is an ideal which from the very nature of dialectic can never be quite realized.

Di alcune cause della avversione presente per la Filosofia in Italia. E. JUVALTA. R. I. d. Fil., VII, 1, pp. 3–28.

The causes of the present aversion to philosophy in Italy are (1) false conception of the object and worth of philosophy, and (2) certain prejudices due to the recent conditions of philosophy in Italy. To these must be added more serious and fundamental obstacles: (3) the dogmatical and sceptical spirit of the Italians, due in great part to their Catholic inheritance, which prevents them taking a free and untrammelled view for the sake of truth alone; and (4) the specialization of knowledge and science, which, though it may ultimately lead to a quest for unity, at present serves only to obscure that unity. Again (5) the present tendency of the Italian mind is historico-critical; and the interest in the history of philosophy, which after all is not very profound, is for the present at any rate unfavorable to original systematic philosophy. Lastly, (6) the endeavor to conciliate the practical and the scientific demands of the age in the reorganization of secondary education, has crowded out the studies which might have favored the development of philosophy.